

Transit Profile: All Transit Agencies for the 2011 Report Year

NTD
National Transit Database
Federal Transit Administration

Transit Profiles: All Reporting Agencies Á Á National Transit Database
2011 Report Year

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Federal Transit Administration
US Department of Transportation

October 2012

#### **Table of Contents**

#### Introduction

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Ø[ | Ás@ ÁGEFFÁ^] [ | cÁ^ad ÉÁ FÏ Áta) • ãsÁet^} &ð • Á\* à{ ãcc à Ás accadÁJ -Ás@acdÁ HÍ Ást^} &ð • Á| Á\* ||Á^] [ | cC| • Ás) åÁl Ást^} &ð • Á\$ •{ add A^• c^{ • A asso^|• Ast ^} at ^} at ^} at ^|• Ast ^| at ^| ¦^&\@ix^å/\$æ\$\@ixix^¦A;|{/\$a^c@ix}^åAn^][¦ca!\*EV@•AiH=\$e#^}&&\*^\$&Ai&|\*a^a\åAi&ix@Aix\O&ix

Uç^¦Ás@Áæ óÁ^ Á^æ4•Ás@ÁÞVÖÁœæÁ}å^+F{}^Áã}ã}ã&æ óÁ&@æ}\*^•Áæ}åÁn} @æ}&^{ ^} oÁæ}åÁs@Á¦[ã••Áææ^Ása^}Á ¦^å^•āt}^åÁt∫Áæ&&[{{[åææ^Ác@••^Á&@æ}\*^•ĒÁÁ

#### **FY2011 Annual Reporting Changes:**

- FEÁ Þ^ ÁY æãg^\¦ÁV^] ^ËÁÚ{ æ||ÁÛ^• c^{ ÁY æãg^\¦ËÁH€Á; ¦ÁØ^ ^\¦ÁK^@BK|^• EÁ
- ˝Á Ù{ ´æ|ÁÛˆ• ơ{ ẢY æ´ág^\¦Á^] |æ&^• Ás@ ÁÞ ǎj ^Á; ¦ÁØ^¸ ^¦ÁK^ @&K|^• ÁY æ´ág^\¦ÉÁ ˝Á Þ^¸ ÁY æ´ág^¦ÁYˆ] ^ÆÄÛ{ æ|ÁÛˆ• ơ{ ÁY æ´ág^¦ÉÁ+H€Á; ÁØ^¸ ^¦ÁVehicles Á ¦^``å^{^^}o`ÈV@^A^][ida\*Á^``ã^{^}o^Á!ÁœāÁ,æāp^¦Á&æa}Åa^Á;`}åÁa¸ÁœÁ^);æææ^ÁÙ{ædAÛ;•c^{•Á^æāp^¦Á
- "Á H€Å¦Á^, ^¦Áç^@38Å•Á¶^\A, Å\ aœ^åÁ§Áæ}} aæ∮à ææ¢ã "{Ár^\ca8^ÁQXUTÙDÁæ&|[••Áæ|Á;[å^•Á;¦ká]c@ååã^&d^Á;]^\ææ°åÁQÖUDÁ æ) åÁÚVÁ ^¦çã& • ÁÁ
- ″Á ΟΕΠΑΑΛ¦çã&ΛΑΘΕΑΑ[}ËãφΛåΑΤ˙ããΛ¸æÂΦΡØÕD
  - Ù{`æ|ÁÛ;•ơ{•Á;æã;^¦Ácē^}&ã•Á•Á;•ÁæÁ;^, Á[;{ Ù{æ|ÁÛ;•ơ{•Áæã;^¦Á[;{ÁÇYЁH€DÁ;Á^][;dÈ
- GHÁ Þæð ¦æþÁÖæ æð c^¦EP[|åÁPæd{|^••ÁVææç^¦EÁ
- $H\dot{Z}$   $T[ | ^{\dot{A}}\dot{z}]$   $\dot{z}$   $\dot{z}$
- | EÁ CEÁ á ã ã Á; | å^•Á; | ^\án; | \*Áse Á á; ^ å Á; à ã ^, æ Áse Á á; ^ å Á; | Eá; ^ å Á; à æ Á; · ÉÁ; Áæ; ã Á; æ Áæ; å Ás; ÉÁ; Áæ; ã Á; æ Áæ; å Ás; e ÉÁ; Áæ; ã Ás; æ Áæ; å Ás; e ÉÁ; Áæ; ã Ás; æ Áæ; å Ás; æ Áæ; æ Ææ; æ Ææ;
- Î ÈÁ Šạ^•Á(; | ÁÀà[} å•Áa) åÁ(a)•ÁÁ@aç^Áà^) Á^{ [ç^åÁ;[{Áa@ÁØËF€ÉÁØ;]a) & â,\*Á@,\*Á@,\*ÁA][;Áà^Á^][;c^åÁàæ-^åÁ;}Áa@.Á d`^Á[; | & Á;-Á\*) å•ÉÁ;||[,ā,\*Á\*ãa) & Á;A,Á@ÁNÙUOĐÁÁ
- ÏÈÁ Þ^, ÁŪœec^{^}o√(-ÁØā)æa)&Λ•Á[¦{ÁQØÊÌ€□DÈÁ
- ìÈÁ Ü^ç^} ~ ÁK^@BK|^ÁQ;ç^}q[;^ÁØ[;{ÁÇDHÏHEDÁKÁ

  - ″Á Þ^¸ÁTæ) ~æ&c°¦^Á&(å^∙ÁÁ ″Á Wjåæc^åÁ\*;ããæ)&^Á¦¦Á^][¦¢ã,\*Á;ã∱æt^ÁÄæætЁ¦æå^Á;ãc@Æk¦[••Εdæ-æÆÆÄÁÁ
- JÉÁ Øãg∧ å ÁÕ ãã∧, æ ÁÛ∧\*{ ^}œ ÁǦ¦ ÁÇÜEÖ⊖DÁKÁ ″Á ÜEÖ⊖Á@æ Á,^, Á&[| ॅ{}ÁǦÄÄ; [å^Á&]æã; ^å ÉÄÁÁ
- F€ÀFederal Funding Allocation Statistics Module : Á

- Á∰∰Ü^][¦cã,\*ÁÛ,^•c^{ÁA,\*à{ão Á∞ ã ÁÓæ ã ÁÓæ ã ÁÓæ ã ÁQ; {¦{ão ã}}Á¸; {ÁÇÓ. F€DÁãa^}cã ã,\*Á∞ ÁO€F€ÁNZO EÁŞ,Áo∞ Á^¦çã & Ásé^æð Á

#### FFÉ Declarations Module : Á

‴Á Ù^&oāl}ÁÍÁÍ]åæec^åÁqfÁag&lĭå^Ásea}Áfjoāl}Áf¦Án@cÁn^,Ár>VÖÁŪæe;]|ā]\*Ár∽o@låÈÁN

#### The changes described above in reporting for FY2011 have been incorporated in the profile reports.

Ü^ç^}`^•Áx&&¦`^åÁx@[`\*@ÁxÁ;`|&@æ^åÁx¦æ)•][¦cææā[}Áxť¦^^{^}]æ¦æ¢åÁ\$;q[Á^\|^|•Á,ãx@A;`|&@æ^åÁx¦æ)•][¦cææā[}Á Ú¦^çā[ˇ•|ՐĒÁ^||^!•Á;Á-Á^¦çæ&^Á;Á;[}ËÞVÖÁ^][¦ơ\•Á&^œæA^åA¸åa,\*Ás^ÁœÁ[ˇ¦&^Á,AœÁs^^lœÁ´;`å•ĒÁ¸À;èÈÈÁ¸^}^¦æÞÁ ¦^ç^}~^•Á;^ÁœÁ;(8œÁ\*[ç^i}{ ^}œÁ;){ ^}œÁ;(]Á;[¦di;}Á; ÁœÁ;(]á;[di;}Á; ÁœÁ;(]aæ;)•Ás[[œá; ^}^|aæá; åÁæ; æá; åÁæ; æá; þi. (æá; þi. Ő^}^\aba\fi\_{|{`aba}|{`aba}\fi\_{|{`aba}|{`aba}\fi\_{|aba}}\fi\_{aba} •^¦cax^Á\*1] jà å Á\$ ^• c^{ À a a ^DÁs) å Á\$ ^ @BN • Á 1 ^ | ac å Á\$ Á æçā \* { Á ^ | cax ÁX UT Ù DÀ

^¢]^}å^åÊA`{{ æ\$^Á;-Á;]^|ææ;}\*Á\¢]^}•^•ÁQJÒDÊA[['|&^•Á;-Á&æ;]āæ;A\F)å•Á\¢]^}å^åÁæ;åÁ\•^•Á;-Á&æ;jāæ;A\F)å•ÈA\[|Á;&A []^¦æé^å Ása^ÍÁse}Áse<sup>‡</sup>^}&^ÉÁÁ

Øij æj &ãæḥÁs [¦{ ææi]}Ás, &|ˇå^•Áæò^Á^ç^}`^•Áæ}^^åĒÁæò^Á^ç^}`^•Áæi]]â³åÁs[Á;]^¦ææi]}•ĒÁ[ˇ¦&^•Á;Ā;]^¦ææi]\*Áˇ}å•Á ^¢]^}å^åĒÁˇ{ { æþ^Á;Æj]^¦ææi]\*Áv¢]^}•^•ÁQUÒŒÁ\*[ˇ¦&^•Á;Ææi]ãæḥÁˇ}å•Áv¢]^}å^åÁæi)åÁæi)åÁæòjåÁ•^•Á;ÆæijãæþÁˇ}å•ĚV [Á;âħÁ &@æò•∱¦æij @®æh|^Ás^]ã&oÁ[ˇ¦&^•Á;Áj]^¦ææi]\*Áˇ}å•Ávġ]^}å^åÁæij寿ijãæḥÁˇ}å•Áv¢]^}å^åÈV@Á^{;æijå^¦Á;ÁœijÅ;[Æj^Á ]¦^•^}œÆj-{¦{ææij}ÁæòÁ;[å^Ár°ç^|ÈŒ∏Á;[å^•Áæò^Ásj-&|ˇå^åÈÓ\*•ÁÇTÓDÁæjåÁ@æçˆÁæijÁÇPÜDÁæjæ°•Áæij]^æiÁai•ÓæijåÁn^&[]åÁæÁ []^¦ææ°åÁsˆÁæjÁæið^}&°ÈÁ

U]^\aca; \*´m`ç]^}•^•ÁÇUÒDÉA±A^Á^ç^}`^•Éaa}åÁ^\; a&^+Á; aðá^\; a&^-Á\*]|∂\*åÁæ}åÁæ]}åÁæ]}•`{ ^åÁa^´Á; [å^Áa[Á;[óÁ;&]`å^Á;`\&@æ•^åÁ dæ)•][\caea}}ÁCUDÉaææáA^][\c^åÁa^Áo@Á•^||^\•Á;—Á^\; a&^\ÉÁ

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- •Á OÆÁ^][¦ơÁ; æ̂Á;[ơÁ@æç^Áà^^}Á^&^ãç^åÁ;¦ÁæÁ;æádæči|æbÁ^æbÁ
- •Á OĐÁ, asanon' ká ac Á@anon' ká ac Á@anon' ká ac A
- $\bullet$ Á Ø[||[  $\ddot{a}$ \*Áçædañaænā]}ÉååæææÁ æêÁææç^Áå^^}Á;ædcñæd|^Á;¦Á&[{]|^ $\circ$ ^|^Áå^| $\circ$ 0°åÉÁ;¦Á
- •Á Özezzéki zé Á@zeç^Ási^^} Ási^^ ( ^ å Á ` ^ cāl } zeà | ^Ási Ászéki zek GZK | zek Á ^ zek ÉA
- Á Ùœdcā \* Á\$ Á©€Ê Ê\$æ^^] æðæ° Áā^Á\$[8\*{ ^} cā \* ÁæþÁ\$æææ\$æ^{ Á\$^^{ ^åÁ\*^• cā}} æða |^ Á\$\* ¦ā \* Áçæþãææå } Á¸ āļÁ\$^Á; |ç çã^å Ÿ Á c@Á° VÖÁ¸ ^à• ã° ÈÞP [ ^ç^! É\$aæææ\$æ^{ Á æãç^å É\$å^|^c^å É\$, |có^] [ !c°åÁ¸ ^!^Á\$; å å&ææ°å Á, ^¢oÁ; Ásæææ°£° { EÅ

CE] ^ } å 㢠ÁCEÁ; ! [çãà^• Ásè) Ásē \* !^\* æc^Á; ! [-áj^Á; ! Áse|Áslæ) • ãóÁsē ^ } & & • Ás & & Ás Ás Ás Ás@ ÁCEFFÁs æzæàæ • ÈÁCE] ] ^ } å 㢠ÁÓÁsā^ } çãã • Á æc ^ } ; [-çå Á^] [ |-cāj \* Ár¢/ ] |-cāj \* Ár¢/ |-cāj

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- •Á V@AÖæææÁvæà|^•Á
- •Á Þædi}æÁÁ¦æ;•ãóÁÚˇ{{ædê?•Ásc}åÁV¦^}å•ÉÁsc}åÁÁ
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#### **Transit Profiles: All Reporting Agencies for Report Year 2011**

- €€€GÁ Ù][\æ}^ÁV¦æ}•ãdÁŒc@;¦ãĉÁÇÙVŒDÁ
- €€€ÍÁ Òç^¦^œÁV¦æ}•ãøÁQÒVDÁ
- €€€ÎÁ ŸæàãįæÁV¦æ)•ãoÁÇŸVDÁ
- €€€ÏÁ Šæ)^ÁV¦æ)•ãøÁÖã dã&øÁÇŠVÖDÁ
- €€FFÁ Xæ|\^^ÁÜ^\*ã|}æ|ÁV¦æ)•ãó(QXÜVDÁ
- €€FGÁ T  $^{*}$ } 884] æ4acî Á  $^{*}$ AOE, 8.40} !æ\*  $^{*}$ AÖÄÜÜ  $^{*}$ a|88ÁV!æ; •] [ | cæea]} AÖ $^{*}$ 1 | æ4d  $^{*}$ 3 | æ4d  $^{*}$ 3 | æ4d  $^{*}$ 4 | æ4d  $^{*$
- €€FÎÁ Ô[{{ `}}ãcÁWàæ}ÁÓ`•ÁÙ^¦çã&AQÔWÓÙDÁ
- €€FÌÁ Ó^}ÁØlæ}\|ã,ÁV¦æ}•ãÁQÓØVDÁ
- €€FJÁ Qìc^¦&ãc Á/¦æ) •ãcÁQÒÈ/ÈDÁ
- €€G€Á São æţÁV¦æţ•ãoÁÁ
- $\in \mathbb{CGF} \hat{A} \quad \text{Y @ anset} [\{\hat{A}/|as\} \bullet] [|canseta|\} \hat{AOE} \circ \mathbb{Q} | \hat{ac} \hat{AQY} \lor \mathbb{QED} \hat{A}$
- €€GGÁ ÔãC Á, ÁÚ[ &æc^||[ ÁËÁÚ[ &æc^||[ ÁÜ^\* ā] } æþÁ/¦æ) ãbÁÇÚÜ V DÁ
- $\in \in G \land \hat{O}[ab] \land$
- €€GÍÁ Ùæ¦^{ÁŒ!^æÁTæ•Á/¦æ)•ãóЮãdækóÁÇÔ@;¦ájoDÁ
- $\in \in G$ JÁ Ù}[@{{ã @ÁÔ[`}c ÂÚ`à|à&ÁV¦æ}•][|cæaā[}ÁÓ^}^-āÁŒ[^æÁÑ[:][|æaā[}ÁĢÔ[{{ ` } ãc ÁV|æ}•ãŒÁ
- €€HÁÜ[\*\*^ÁKæ|^^ÁV¦æ)•][¦ææã}}ÁÖã dæðá¢ÜXVÖDÁ
- €€HÍÁ Yæ•@ā,\*d;}ÁÛcæe^ÁØ^;;ãN•ÁQYÙØDÁ
- $\in \in A$   $\hat{O}$  dat $\hat{A}\hat{U}$  \*  $\hat{O}$  dat $\hat{A}\hat{U}$  \*  $\hat{O}$  dat $\hat{A}\hat{U}$  \*  $\hat{O}$  dat $\hat{O}$  d
- € FÁ OE;æ\æÁÜæá¦[æáÁÔ[¦][¦æáá]}ÁQDEÜÜÔDÁ
- € GÁ Væl\* @^ÁÜ^\* ã| } ælÁÚ\* à| ã&ÁV¦ æ) ãxÁŒ c@ ¦ ãc ÁQVÜÚVŒDÁ
- €€IHÁ Šã\ÁV¦æè•ãoÁ
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- €€ÍÁ Øæáiàæ}\•ÁÞ[¦c@ÁÚædÁÓ[¦[\*\*@ÁV¦æ;)•ãxÁÇT ŒŰÔÙDÁ
- €€ ÎÁ Ù[ coán ^d[ÁOE^æÁÜ^\*ã]}æÁV¦æ)•ãxÁÇÌT OEÜ VDÁ
- € IÁ ÔãCÁ ÁÔ ¦çæ|ã ÁQÔ VÙ DÁ
- € JÁ XÚÙQÃO & & Q ¦æ\*^Á
- €€ÍIÁ SÃ;\*ÁÔ[\*}c°ÁØ^¦¦^ÁÖã;dæðóÁÇSÔØÖDÁ
- F€€FÁ Ü@ å^Á@ |æ) åÁÚ à |æÁÁ¦æ) •ãÁŒ c@ ¦ãĉ ÁÇÜÓÚVŒÐÁ
- F€€GÁ Tæ}&@•¢\¦ÁV¦æ}•ãxÁŒc@¦ãc ÁOT VOÆDÁ
- F€€HÁ Tæ•æ&@•^œ•ÁÓæÂÁ¦æ;•][¦ææā;}ÁŒc@¦ãcÁÇTÓVŒÐÁ
- F€€ÍÁ Š[^\|ÁÜ^\*ã]} æþÁ\¦æ) ãxÁŒ c@ ¦ãc ÁÇŠÜ VŒÐÁ

- $F \in \tilde{A} \hat{A} \circ \hat{A}$
- F€€ÌÁ ÚÃĮ}^^¦ÁXæ∯^^ÁV¦æ;•ãxÁŒ c@;¦ãc ÁQÚXVŒÐÁ
- F€FHÁ T^!¦ã æ&\ÁXæ||^^ÁÜ^\*ã}}æÁ√!æ}•ãÁŒ c@; lãc ÁQT XÜVŒÐÁ
- F€FIÁ Y [¦&^• c^\ÁÜ^\* ã]} æ∮Á\;æ)• ãxÁŒ c@; ¦ãc ÁQY ÜVŒÐÁ
- F€FÎÁ Õ¦^æe^¦ÁÚ[¦dæ}åÁV¦æ}•ãó/Öãdæ&óÁQT^d[DÁ
- F€FÏÁ Ő¦^æz^¦ÁPædeF¦åÁV¦æð•ãd⁄Öã dæðd∕QÕPVÖDÁ
- F€I €Á Ù[ ° c@ æ cÁQE^æÁV¦æ} ãbÁQÙÒQE/DÁ
- F€IGÁ Xæll^^ÁV¦æ) ã dÁÖã dã dã dÁXVÖDÁ
- F€ ÌÁ  $\hat{O}[\}$ ^&cã& cÁ\a) ãoÁZÁP æbc[ ¦åÁÖãçã ã] }ÁQÔVV |æ) ãoÁZÁP
- F€IJÁ V@ÁÕ¦^æe^¦ÁÞ^¸ÁPæç^}ÁV¦æ)•ãóЮã•d&BóÁÇÕÞPVÖDÁ
- $F = (\hat{A} + \hat{A}) \cdot (\hat{A} +$
- F€Í FÁ P[\*•æ{} & AÛE^æÁÜ^\* \$] æ ÁV¦æ}• ã ÁÇPÛEÜ V DÁ
- F€ÍHÁ Ôæ}^ÁŒ}}ÁV¦æ}•][¦ææãi}ÁŒœQ¦ãc ÁQÔŒVŒÐÁ
- $F \in \hat{A} \hat{A} \hat{O}_{A}$   $\hat{O}_{A}$   $\hat{$
- F€ÍÏÁ Þ[¦¸æ|\ÁV¦æ),•ãaÁÖã•dã&oÁ
- F€ÎHÁ Tãaå|^(; }Á/¦æ)•ãxÁÖã dã&xÁQT VÖDÁ
- $F \in \hat{I} \mid \hat{A} = \hat{O} \mid \land \text{age} \mid \hat{A} \text{OUTC} \mid \land \hat{I} \mid \hat{E} \mid \land \hat{I} \mid \hat{A} \text{U} \mid \hat{A} \text{U}$
- $F \in \hat{I} \hat{A} \quad \hat{O}(\hat{a} \hat{a} \hat{c}^{*}) \hat{a}^{*} \hat{A} \hat{O}(\hat{a}^{*}) \hat{a}^{*} \hat{A} \hat{O}(\hat{a}^{*}) \hat{a}^{*} \hat{A} \hat{O}(\hat{a}^{*}) \hat{a}^{*} \hat{A} \hat{O}(\hat{a}^{*}) \hat{A} \hat{$
- F€ÎJÁ Ü^\*ã[}æ|Á\¦æ)•][¦ææã[}ÁÚ¦[\*¦æ;ÊÁQ&ÈÇÜVÚDÁ
- $F \in = \hat{A} \quad \hat{O}[[]^{\cdot}] \times \hat{A} = \hat{A} + \hat{A} +$
- F€ÌÏÁ Þæ•@æÁV¦æ;•ãxÁÛ^•¢^{ ÁÇÞVÙDÁ
- $F \in \hat{A} \hat{A}$   $\hat{A}$   $\hat{A}$
- F€JÎÁ ÔãCÁ(-ÁÓæ)\*[¦ÁÆÓŒYÁÔ[{{`}ãCÁÔ[}}^&@;|ÁÇÓŒYDÁ
- F€JÌÁ Y^•¢^¦}ÁTæāj^ÁV¦æ)•][¦ææāj}ÁÙ^¦çæ&^•ÉÆQ&Á
- FF€GÁ Ô[}}^&a&` ơЮ̈^] ætd ^}ơÁ -ÁV¦æ)•][¦ææá]}ÁQÕÖUVDÁ
- FF€ÍÁ Ôæ}^ÁÔ[åÁÜ^\*ã]}æÁÁ¦æ;•ãAÓEc@!¦ãcÁQÔÔÜVŒÐÁ
- FF€ÏÁ TãH¦åÁV¦æ}•ãoÁÖã dã&oÁQT VÖDÁ
- $\mathsf{FF} \triangleq \mathsf{A} \quad \tilde{\mathsf{O}} \mathsf{I} \land \mathsf{aec} \mathsf{I} \mathsf{A} \triangle \mathsf{E} \mathsf{ee} \mathsf{I} \mathsf{I} \mathsf{A} \triangle \mathsf{I} \triangle \mathsf{E} \mathsf{ee} \mathsf{I} \mathsf{I} \mathsf{A} \triangle \mathsf{I} \triangle \mathsf{E} \mathsf{I} \mathsf{Ee} \mathsf{I} \mathsf{I} \mathsf{Ee} \mathsf{I} \mathsf{I} \mathsf{I} \mathsf{Ee} \mathsf{Ee} \mathsf{I} \mathsf{Ee} \mathsf{Ee} \mathsf{I} \mathsf{Ee} \mathsf{Ee} \mathsf{I} \mathsf{Ee} \mathsf{Ee} \mathsf{Ee} \mathsf{I} \mathsf{Ee} \mathsf{Ee} \mathsf{Ee} \mathsf{Ee} \mathsf{I} \mathsf{Ee} \mathsf$
- FFFI ####Óãåå^{¦åËÙæ\$| ËU|åÁU¦&@æååfÓ^æ&@ÁV¦æ}•ãøfÔ[{ {ãæ^^ÂÛ@cd^ÁÓ\*•Á
- FFFÍ Á Þ[¦c@\} ÁÞ^, ÁÒ} \* |æ} åÁÚæ•^} \* ^\ÁÜæ∰ÁŒ c@\¦ãĉ ÁQÞÒÚÜŒÐÁ
- FFFÏ ÁÁÁÁÚÍ^{ [ \* c@ÁBÁÓ! [ &\ d] } ÁÚC!^^cÁÜæði.æêÁÔ[ { ] æ}^Á
- FFFÌÁ T^d[Y^•ơÁÜ^\*ã[}æþÁ\¦æ)•ãxÁŒơ@; ¦ãc ÁÇT Y ÜVŒĐÁ
- FFFJÁ W¦ãç^¦•ãc ÁJÁ¬^, ÁPæ; ]•@ã^ÁËÁW¦ãç^!•ãc Á/¦æ;•][¦ææā;}ÂÛ^¦çã&^•ÁŒ^PÁWÙDÁ
- FFGGÁ Radantována ja \* Ékopa a \* Éko
- FFGÌÁ  $\hat{O}[\}$  ^ & calk continuous de ( ^) or Avia = 1 [ | caeaa | EÎÔVV | a | a or Avia = 1 | EÎP ÒVÁ
- FFH€Á Ô[}}^&ca&`oÁÖ^]æbc(^}oÁ(-Á/læ)•][¦cæca[}AÆÖVVÜOŒÞÙOVÁÞ^, ÁÓ¦ãææi]Á

- $C \in C$   $\hat{C}$   $\hat{C}$
- $G \in A \rightarrow \tilde{a} = \tilde{a} + \tilde{a} + \tilde{b} = \tilde{a} +$
- G€€ÎÁ ÔãCÂ, ÁŠ[}\*ÁÓ^æ&@ÁČŠ[}\*ÁÓ^æ&@ÁČ`•DÁ
- $G \in \exists \text{ A} \quad \text{T } \land \text{d} [\text{] [| a \bar{a}zaa|)} \text{ A} \hat{\textbf{U}} \quad \text{a} \quad \text{i} \quad \text{a}zaa|)} \text{ A} \hat{\textbf{U}} \quad \text{o} \quad \text{A} \hat{\textbf{U}} \quad \text{c} \quad \text{o} \quad \text{d} \quad$
- GEEÌÁ TVOÐÁÞ^ ÁŸ[¦\ÁÔã¢ÁV¦æð•ãxÁQÞŸÔVÐÁ
- G∈€JÁ ÔãĉÁ;-ÁÚ[ \* @.^^] ã\Á
- GEF€Á Ö c&@••ÁÔ[  $^{\circ}$ } c ÁÖãçã ã}}Á, ÁT æ•Á\;æ•Á\;æ•] [ | cæaã} AŠ[ [ ] ÁÓ DÁ
- GEFÌÁ ÔÞŸÁÔ^}d[ÉÁQ&ÈÁÇÔÞŸÁÔ^}d[DÁ
- GEÏFÁ P`}cã;\*q[}ÁOE^æÁÜæ;ãæÁV¦æ;•ãeÁQPOEÜVDÁ
- $G = G + U \{ | A\hat{O}[ ] + A\hat{O$
- $G = \iint A \quad U[ | o \hat{A} O E | co@ | | \tilde{a} \tilde{c} \hat{A} / | | ca) \cdot \tilde{a} \hat{A} \hat{O}[ | ] [ | | caca_{\tilde{a}} | | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U D \hat{A} | | caca_{\tilde{a}} | A \hat{Q} \hat{U} O E / \hat{O} U$
- GET Î Á Y ^ 0&@ c'\ KÔ[ \* \} c' KÓ^ ^ EŠÃ ^ ÂÛ c'\ ÁO/ @ KÓ^ ^ EŠÃ ^ ÂÛ c'\ DÁ
- $\mathbf{G} = \hat{\mathbf{I}} \hat{\mathbf{A}} + \mathbf{T} \hat{\mathbf{A}} = \hat{\mathbf{G}} \hat{\mathbf{G}} \hat{\mathbf{G}} = \hat{\mathbf{G}} \hat{\mathbf{G}} \hat{\mathbf{G}} = \hat{\mathbf{G}} \hat{$
- G€Ì€Á Þ^¸ÁR^\+•^^ÁV¦æ)•ãσÁÔ[¦][¦ææã[}ÁÇÞRÁVÜŒÐÙQYDÁ
- GE GÁ Þ^ ÁŸ[:\ÁÔãc ÁÖ^]æd ^} oÁ ÁV;æ)•][:cæði} AÞ ŸÔÖUVÐÁ
- G€ÌIÁ V¦æ}•][¦ơÁ, ÁÜ[&\|æ}åÁQVUÜDÁ
- G€ÌÍÁ Ô|æ\•d;}ÁTā;áË/¦æ}•Á
- $\mathbf{OE} \hat{\mathbf{I}} \hat{\mathbf{A}} = \mathbf{V} \cdot \mathbf{A} \cdot \mathbf{A}$
- GEÌ JÁ Xāļat^Á; -ÁÚ] ¦ā; \*ÁXæļ\^^ÁÓ\* •ÁQÚ] ¦ā; \*ÁXæļ\^^ÁRã; ^^DÁ
- G€JÎÁ Úˇ¢}æ{ÁÔ[ˇ}cÂV¦æ}•ãAÇÚŒÜVDÁ
- Q€JJÁ Ùœer^}Á@|æ)åÁÜæ)ããÁV¦æ)•ãÁÚJ? \existandi ^ ãÁÚJ) ^ ¦ææ3; \*ÁOE o@ ¦ãô É&ààækÁT VOÆÚœer^}Á@|æ)åÁÜæã; æêÁQÌØÙVUOÆÁ
- CFۃÁ TVOÆŠ[}\*ÁQ|æ)åÁÜæájÁÜ[æåÁÇTVOÆŠQÜÜDÁ
- GFFHÁ Ü^\*ã|} æþÁ¦æ) ãxÁU^¦çã& ÉÃQ & ÉÁQ & ÉÁQ & ÉÉQ & ÉÉQ & ÉÇÜ ÉÖÜ V OÐÁ
- QFFÎ Á Ô^} d [ Á ÁÔæ° \* æÉÁQ &ÈÇÔ^} d [ Á ÁÔæ° \* æÐÁ
- GFGGÁ OB&æå^{ ^ÁŠã}^•ÉÁQ&ĚÁ
- OFGÎÁ P°å•[}Á√¦æ}•ão∕Šã;∧•ÉÁQ&ÈÈÙ@;¦cÁŠã;∧DÁ
- QFQ Á Ù à làæ Á/læ ã ÞÔ[l][læ ã } QÔ [æ& @Á VÙ QĐÁ
- QFHGÁ Þ^, ÁR^\+•^^ÁV¦æ)•ãdÔ[¦][¦ææã[}ËÍQÞRVÔËÍDÁ
- **G**FHÍÁ T[}•^^Áp^, ÁÛ ĕæ'^Á/¦ææ∳ÁÔ[¦][¦ææã[}Á
- GFHÏÁ T[}¦[^ÁÓˇ•ÁÔ[¦][¦æeãi}Á
- GFIHÁ V[,}Λ[,-Λ[•^, à ˈ¦\*@Á
- QFIÌÁ Þ^¸àˇ¦\* @ÁÓ^æ&[}ÁÓˇ•ÁÔ[¦][¦ææã[}QÞÓÓÔDÁ
- GFIJÁ Ü[&\|æ)åÁÔ[æ&@•ÉÁQ&ÉÁ
- $QF\hat{I} \in \hat{A} \quad \hat{O}[\{\{i^*\} \hat{a}\hat{c}^* \hat{A}' | aa\} \bullet \hat{a}\hat{b}\hat{A}\hat{Q}, \& \hat{b}\hat{A}\hat{Q}\hat{O}[\{\{i^*\} \hat{a}\hat{c}^* \hat{A}' | aa\} \bullet \hat{a}\hat{b}\hat{A}\hat{Q}, \& \hat{b}\hat{A}\hat{Q}\hat{O}(\{i^*\} \hat{A}' | aa\} \bullet \hat{a}\hat{b}\hat{A}, \& \hat{b}\hat{A}\hat{Q}, \& \hat{b}\hat{A}\hat{Q}\hat{O}(\{i^*\} \hat{A}' | aa\} \bullet \hat{a}\hat{b}\hat{A}, \& \hat{b}\hat{A}\hat{Q}, \& \hat{b}\hat{A}\hat{Q}\hat{O}(\{i^*\} \hat{A}' | aa\} \bullet \hat{a}\hat{b}\hat{A}, \& \hat{b}\hat{A}\hat{Q}, \& \hat{b}\hat{A}\hat{Q}\hat{O}(\{i^*\} \hat{A}' | aa\} \bullet \hat{a}\hat{b}\hat{A}, \& \hat{b}\hat{A}\hat{Q}, \& \hat{b}\hat{A}$
- GFÎ FÁ Ö^Ôæ[]ÁÓ ÁŠã]^•Á
- GFÎ HÁ Šæà∧|æ) åÁÓ •ÁŠã;∧•ÉÁQ,&ÉÁ

- GFÎ Î Â
   U|^{ } are Î | are Î |
- GFÎJÁ V¦æ),•ËÖ¦ãã\*^ΑŠã,Λ•ÊÃQ&ÈÁ
- $\begin{array}{lll} \text{GF\"i F\'A} & \text{\'U\'i \~a\~ç} \text{æe}^{\text{\'A}}\text{U}}^{\text{\'A}} & \text{\'A}^{\text{\'A}} & \text{\'A}^{\text{\'A}$
- QFÏ GÁ Ô^}d[Á;ÁÚ•¸^\*[ĒÁQ;&ĒÇÔ^}d[Á;ÁÚ•¸^\*[DÁ
- $GF\ddot{\mid} \dot{A} \quad \dot{U} | \tilde{a}_{p} \cos^{A} \dot{A} | a \rangle \bullet ] [ | caecai_{p} \rangle \dot{A} \hat{O}[ | ] [ | aecai_{p} \rangle \dot{A}$
- GFÏÏÁ OTåã[}åæ&\ÁV¦æ)•ãó√Šãj^•ÊÓQ&ÊÇDåã[}åæ&\ÁV¦æãj æê•DÁ
- QFÏ JÁ P^} å¦ 88\ ÁP \* å•[} ÁÓ \* ÁŠã, ^• ÉÁQ, &ÈPP ÓŠDÁ
- GFÌ HÁ V[ , } Á; ÁT [ } ! [ ^ÁÖæÞÐÐÉ QT [ } ! [ ^ÁÖŒÐÐÁ
- $QFIIA O^{d}_{A} = 0^{d}_{A} AU 0$
- GFÌÏÁ Xã|æt^ÁçÁSãîæ ÁRŢ^|ÁÇSRDÁ
- QFÌÌÁ T VOĐÓY ÁÔ[{] æ}^ÁQT VOĐÓWÙĐÁ
- QFÌ JÁ Ó ĐỊ Ô Ó Â Ø H Â Ô [ { ] æ Â Ê Š Š Ô Á
- CFJ€Á Ú[¦σÁQ]^¦ãæḥÁØ^¦¦^ÁÔ[¦][¦ææā]}ÁsàæÁÞŸÁVææ^¦,æêÁ
- GFJHA  $\hat{O}^*\{ a^{1}|aa\} a^{4}GE^{aa}V aa^{4}V aa\} \bullet \tilde{a}aA\hat{U}^* \bullet c^{4}\{ A^{4}V aa^{4}V a$
- GFJIÁ Òæ•oÁvājå•[¦Áv[、]•@ajÁ
- $GFJ\hat{I} \hat{A} T \tilde{a} \hat{a} | ^{-} \hat{c} \hat{A} \hat{O} | ^{-} \hat{c} \hat{A} \hat{O} = \tilde{a} \hat{A} \hat{O} | ^{-} \hat{a} \hat{A} \hat{O} = \tilde{a} \hat{A} \hat{O$
- GFJJÁ Ô[ˇ}cˆÁ,ÁOEqæ)ca&Á
- GG€€Á Ù[ c@ÁR\!•^^ÁV¦æ)•][ cææã]}ÁOE c@; ãô Á
- GG€FÁ Ô[ˇ} c Á ÁÔ { à^ | að åÁ
- $CO = CAA \hat{O} \bullet \land cA\hat{O}[\hat{\ }\} \hat{c}\hat{A}\hat{O}\hat{a}\hat{c}\hat{a}\hat{a}\} \hat{A} \cdot AA \hat{a}\hat{a}\hat{a} \hat{a} \hat{A}\hat{O}\{\hat{\ }\} \hat{a}\hat{A}\hat{O}\{\hat{\ }\} \hat{A}\hat{O}\{\hat{\ }\} \hat{O}\{\hat{\ }\} \hat{A}\hat{O}\{\hat{\ }\} \hat{O}\{\hat{\ }\} \hat{A}\hat{O}\{\hat{\ }\} \hat{A}\hat{O}\{\hat{\ }\} \hat{O}\{\hat{\ }$
- GO√EHÁ Ôæ}^ÁTæÎÁÔ[ˇ}ĉÁØæk^ÁØ!^^ÁV¦æ}•][¦ææaã]}Á
- GOELÁ Ù^}  $\bar{a}$  |  $\hat{A}\hat{O}$   $\bar{a}\bar{a}$  ^}  $\hat{A}\hat{V}$  |  $\bar{a}\hat{c}$  °  $\hat{A}\hat{O}$  [ { { ` }  $\bar{a}\hat{c}$  °  $\hat{A}\hat{U}$  ^|  $\hat{c}\bar{a}\hat{c}$  °  $\hat{A}\hat{O}$  |  $\hat{A}\hat{O}$
- $H \in \mathbb{R}^{A}$  Sa)  $= \mathbb{Q}_{A} \times \mathbb{Q}_{A} \times$
- HE€GÁ V@Á¦áÉÚcærÁ/¦æ}•ãaÁŒc@¦ãcÁQVVOEDÁ
- HE€HÁ TããËU@TÁXæH^^ÁV¦æ;•ãxÁŒc@Q¦ãcÁ
- $H \in \hat{A} \hat{A} \hat{O}^{\cdot} \times \hat{A} \hat{U} = \hat{A$
- $H \in \tilde{A} \hat{O}^{\cdot} \times \tilde{A} = \tilde{A} \hat{A} = \tilde{A} \hat{A} = \tilde{A} \hat{A} \times \tilde{A} = \tilde{A} \hat{A} \times \tilde{A} = \tilde{A} \hat{A} \times \tilde{A} \times \tilde{A} = \tilde{A} \times \tilde{A} \times \tilde{A} \times \tilde{A} = \tilde{A} \times \tilde{A} \times \tilde{A} \times \tilde{A} \times \tilde{A} = \tilde{A} \times \tilde{A}$
- H€€ÌÁ Õ¦^æe^¦ÁŠ^}&@a`¦\*ÁV¦æ}•ãóÁÕ[{]æ}^ÁQÕŠVÔDÁ
- HE€JÁ Ú^¢^¦•à`¦\*ÁŒ^æÁV¦æ}•ãóÁÇÚŒ/DÁ
- H€F€Á Š^@#@Ána;åÁn>[¦c@an{]q[}Á/¦an}•][¦cæanā[}ÁQĔc@|¦ãcÂQŠOÐÞVOÐÐÁ
- HEFFÁ OF[[] æÁT^d[Á/læ) ã ÁÇOET VÜOEÞ DÁ
- H€FGÁ Ôæ(à¦ãæÁÔ[ˇ}cÂV¦æ)•ãxÁŒc@(¦ãcÂQÔæ(V¦æ)DÁ
- HEFIÁ Ôæ; ãæ; ÁŒ; æ; ã; ÁÇÔŒ; DÁ
- $H \in F(A \otimes S' : A| A \wedge A \otimes F) = A \otimes F(A \otimes A \otimes F) = A \otimes F(A \otimes F) =$

- H€FÌÁ Ü^åÁÜ[•^ÁV¦æ)•ãÁŒœQ¦ãc ÁQÜÜVŒÐÁ
- $H \in FJA \qquad \dot{U}[\dot{C}@e e c'] \dot{A}\dot{U} \} \bullet \dot{C} = \dot{C} + \dot$
- $H \in GGA \quad \text{$\dot{U}$ | $\dot{\sigma}$ ($DE$ $cQ$ | $\tilde{a}\tilde{c}$ $\dot{A}$, $-\dot{A}$ ($DE$ $| \Lambda^*$ $Q^*$) $^*$ $\dot{\sigma}$ ($\dot{\sigma}$ $) $\dot{\sigma}$ ($\dot$
- $H \in CHA$   $O^* = A^*A^*O^* =$
- $H = G \land O^{\dagger} \cdot ACE \land ACE \land$
- H€QÍÁ Ô[ˇ] c´Á, ÁŠæ&\æ, æ) }æÁV¦æ) •ãAÛ^• e^{ ÁQÔU ŠVÙDÁ
- $H \in G' \land Y' \mid \land AO(Y) \land AO(Y$
- $H \in H \in A$   $Y \approx (00) * (1) *$
- H€HIÁ Tælî|æa)åÁ√¦æa)•ãoÁOEå{ãjãrdæeã[}ÁQTVOEDÁ
- $H = H \hat{A} \hat{O} \otimes H = C \cdot \hat{A} \cdot \hat{$
- HEIFÁ  $O[[]^*a]^\hat{A}O[]^*\}\hat{c}\hat{A}V|a] \bullet \tilde{a}A\hat{Q}OE\hat{O}VD\hat{A}$
- $H \in GA \quad Y \approx @ * ( ) A \hat{O}[ * ) c A / ( a ) \bullet \tilde{a} A / ( \tilde{O}[ * ) c A \hat{O}[ \{ * c / DA / ( a ) \bullet \tilde{a} A / ( \tilde{O}[ * ) c A / ( a ) \bullet \tilde{a} A / ( \tilde{O}[ * ) c A / ( a ) \bullet \tilde{a} A / ( a ) \bullet \tilde{a}$
- $H \in I \land Y \land \bullet (\{ [ \land | aa) \land \mathring{O}[ \ \ \ \ \ ) \land \mathring{A} \lor aa) \bullet \tilde{a} \not \land OE \land OQ \lor \tilde{a} \land \mathring{Q} Y \land OVOED \land OVO$
- H€IÍÁ ROEWÞVÉÁQ&EÁ
- H∈IÌÁ P[æååÁ√¦æ)•ãaÁQPVDÁ
- HEÍ FÁ  $\ddot{u}$   $\ddot{a}$   $\dot{a}$   $\ddot{b}$   $\dot{a}$   $\ddot{b}$   $\dot{a}$   $\ddot{a}$   $\dot{a}$   $\ddot{b}$   $\ddot{a}$   $\dot{a}$   $\ddot{a}$   $\dot{a}$   $\ddot{a}$   $\ddot{a}$
- H€Í HÁ Ó¦ã đ |ÁXã\*ã ãæÁV¦æ}•ãóÁ
- $He[i \mid A \quad \hat{O}^{\wedge}\} d^{\wedge}AOE^{\wedge}aeA^{\vee}|ae] [\mid caeea_i^{\dagger}\} AOE co@\mid \tilde{a}c^{\wedge}AQ\hat{O}OE^{\vee}OEDA$
- $He[\ddot{A} \dot{A} + \dot{A} +$
- HEÍÌÁ ÔãCÁ Á ÁØæði æ¢ÁÔWÒÁÓ •ÁÇÔWÒDÁ
- HEÎFÁ TãAÁT[}ÁXæ|\^^ÁV¦æ)•ãAÓEcQQ¦ãcÁQTTXVOEDÁ
- $H = \hat{I} \hat{A} = \emptyset \text{ and } (\hat{O}[) \\ \hat{A} = 0 \text{ and } (\hat{O}$
- Heî JÁ  $\hat{O}$   $\hat{a}\hat{c}$   $\hat{A}$   $\hat{A}\hat{O}$   $\hat{a}\hat{c}$   $\hat{A}$   $\hat{A}\hat{O}$   $\hat{a}\hat{c}$   $\hat{A}$   $\hat$
- HEÏ €Á Ú[d[{  $asA = \hat{a} \hat{A} = \hat{a} \hat{A$
- HEÏ FÁ ÔãC Á ÁOE^¢æ) å lãæÁÇÖOEÙPDÁ
- HEÏGÁ V¦æ)•ãxÁÙ^¦çã&^•Á(√ÁØ!^å^¦ã&\ÁÔ[ˇ}cÂ
- HEÏHÁ Xã\*ã,ãæÁÜæã,æÂÔ¢]¦^••ÁQXÜÒDÁ
- HEÏIÁ Pæl-{¦åÁV¦æ}•ãóÁQPVDÁ
- $H \in \hat{A} \hat{A} = \hat{A} + \hat{A}$
- $H \in \hat{A} \times \hat{A} = \hat{A} \times \hat{A$
- $H = \hat{I} \hat{A} \hat{U} = \hat{A} \hat{A} \hat{U} + \hat{$
- HEÏ JÁ Ø1^å^\ 88\ à` \ \* ÁÜ^\* \$1\} æþÁ\\æ} ãxÁØÜÖÖDÁ
- H€Ì€Á OŒ|ā;\*q[}ÁV¦æ;•ãoÁËÓŒ|ā;\*q[}ÁÔ[ˇ}c°ÁQŒÜVDÁ
- $H = \hat{A} + \hat{A$
- $H\hat{G}HA = V_{A} \cdot [(-2\pi^2) \cdot (-2\pi^2) \cdot (-2\pi^$
- HEÌÍÁ Ú¦ã,&^ÁÕ^[¦\*^©ÁÔ[`} c°ÁV¦æ;•ãÓQV@Ó`•DÁ

- $H \in \hat{I} \hat{A} = \emptyset + 0 \hat{A} \hat{O} + 0 \hat{A} \hat$
- $Hell \dot{A} = \hat{O}[\ddot{a} + \hat{A}] + \hat{A} + \hat{A$
- $He \hat{J} \acute{A} T[\}[] * a + \tilde{a} \tilde{a} \tilde{c} \acute{A} \hat{O}[\tilde{\ }] \circ \acute{A} \acute{A} \acute{A} a + \tilde{A} + \tilde{a} \cdot \tilde{a} \acute{A} \circ \tilde{A} = \tilde{a} \cdot \tilde{A} + \tilde{a} \cdot \tilde{a} \cdot \tilde{A} \circ \tilde$
- H€JFÁ Ó Jæ&\•à \*¦\*ÁV¦æ}•ã AÇÓ V DÁ
- $H \in \mathbb{N}$   $\hat{A} = \hat{A} = \hat{$
- $H \in \hat{A} \quad V \otimes \hat{A} \mid \hat{A} = \hat{A} \otimes \hat{A} \mid \hat{A} \mid$
- HF€FÁ Ôã¢Á,ÁYæ@,\*d;}ÁQYÔVDÁ
- HF€GÁ Tæ¦cÁ√¦æãi æê•Á
- HF€HÁ TæchŐ;[ˇ]ÊÁpæðā}æhÁÔ[æ&@ÁY[¦\•Án-ÁXāl\*ājāæÁQpÔYDÁ
- $I \in \mathbb{R}$   $\hat{O}(2000)$   $\hat{A}(100)$   $\hat{A}$
- I €€GÁ S} [¢çã|^ÁŒ^^æÁ√¦æ}•ãσÁÇSŒ√DÁ
- I €€HÁ T^{ ] @ã ÁOE^æÁV¦æ}•ãaÁOE co@;¦ãc ÁQT OE/OEDÁ
- I €€IÁ T^d[][|ãæa)ÁV¦æ)•ãøÁŒc@Q¦ãcÂŒVŒĐÁ
- I €€ÍÁ OE @ çã| ^Á\; æ) ã⁄Á Û^ ¢\ {ÁÇŒ\ Ú DÁ
- I €€ÏÁ Ôæ}ãæ;ÁŒ!^æÁV¦æ;•ãæÁÇÔŒ!/DÁ
- $| \in \hat{A} \hat{O} \otimes \hat{A} = \hat{A} \hat{O} \otimes \hat{A} = \hat{A} \hat{O} \hat{A} \hat{O} = \hat{A} \hat{O} \hat{A} \hat{O} = \hat{A} \hat{O} \hat{O}$
- I €€JÁ Øæê^œ^çã|^ÁŒ!^æÂÛ^• e^{ Á; ÁV¦æ}•ãÁØØŒÙVÐÁ
- I€FFÁ Pã @ÁÚ[ã, cÁV¦æ) •ãcÁQPãÁdæ) DÁ
- $I \in FGA \qquad Y \notin \{0\} \in EDEA(A \land A) = A \land A \in GQ \mid A \in AEA(B) = EDEA(A \land A) = EDEA(A \land A$
- I€FIÁ Ô[æ•oÁ\ˈæ•)•ãoÁŒc@;¦ãcÂQÔVŒDÁ
- I €FÍÁ ÔãC Á ÁRæ&\•[}Á\'æ}•ãAÛ^•¢^{ ÁQROE/ÜOEÞDÁ
- $I = F\ddot{i} \acute{A} \mathring{S}^{\wedge} \not c \mathring{a} * \mathring$
- I €FÌÁ V¦æ) ã AÓE co@ ¦ã ĉÁ; -ÁÜã ç^¦ÁÔã ĉÁÇ/OEÜÔ DÁ
- I €FJÁ V¦æ) ã ÁŒ c@ ¦ãĉ Á; ÁÞ [¦c@ ¦} ÁS^} č &\^ÁQ VŒ SDÁ
- I €GFÁ OEjàæ) ^ÁV¦æ) •ãxÁÙ ^•¢^{ÁÇŒVÙ DÁ
- I€GGÁ T^d[][|ãzæ) ÁOEdæ) cæÁÜæ) ããÁV¦æ) •ãAÓE co@¦ãc ÁOT OEÜVOEDÁ
- I €CHÁ OE \* \* cæÁÜ &&@ [} åÁÔ[\*} ĉÁV¦æ) ãxÁÖ^]æd(^} cÁQCEÚV DÁ
- I€GIÁ T^dæÁV¦æ)•ãAÛĵ•e^{{ÁQT^dæÐÁ
- $I \in GA$   $\hat{O}$   $\hat{O}$
- I €GÎÁ Tæ) ææ^^ÁÔ[ັ} cÎÁŒ!^æÁV¦æ) •ãxÁQTÔŒ!/DÁ
- I €GÏÁ ÚÃ; ^||æÁÛ `} & [æ cÁ\¦æ) ãcÁŒ c@ ¦ãc ÁŒÚÙ VŒDÁ
- I€CÌÁ Š^^ÁÔ[ˇ ἐ ἀ Á\'æ) •ãαÁ(Š^^V¦æ) ΦÁ
- I€GJÁ Ó¦[æ¦åÁÔ[ˇ}c°ÁV¦æ)•][¦æænã[}ÁÖ^]æk({^}oÁQÓÔVDÁ
- I €H€Á Õæã, ^•çã||^ÁÜ^\*ã|}æ|Á√¦æ),•ãóÛ^•¢^{ÁÇÜVÙDÁ
- $I \in HFA$  Šæk^|æk}åÁOE^æÁTæ•ÁV|æk)•ãxÁÖã dãkóÁÇÕãd\*•ÁÔ[}}^8&ã[}DÁ
- I€HGÁ Ô[ˇ}c´Á[-ÁX[|ˇ•ãæÐÉåààæHÁXUVÜOLÐÁÇX[dæ)DÁ
- I€HÁ Tãæ(ãEÖæå^Á√¦æ)•ãóÁOTÖVDÁ

- I €HÎÁ ÔãCÁ, ÁVællæ@æ••^^ÁQÙædT^d[ÁDÁ
- $\mathbf{I} \in H \stackrel{\cdot}{\mathbf{H}} \stackrel{\cdot}{\mathbf{A}} \stackrel{\cdot}{\mathbf{O}}[\text{ add } \hat{A} \stackrel{\cdot}{\mathbf{O}][\text{ add } \hat{A} \stackrel{\cdot}{\mathbf{O}}[\text{ add } \hat{A} \stackrel{\cdot}{\mathbf{O}}[\text{ add } \hat{A} \stackrel{\cdot}{\mathbf{O}}[\text{ add } \hat{A} \stackrel{\cdot}{\mathbf{O}}[\text{ add } \hat{A} \stackrel{\cdot}{\mathbf{O}}[\text{$

- I €I FÁ Pāļ•à[¦[\*\*@ÁŒ?æÁÜ^\*ā[}æÁV¦æ;•ācÁŒ;c@;¦ācÂŒ;OĒÜVDÁ
- $I \in I G \acute{A} \circ \mathring{a}_{1} * @ e \Leftrightarrow \mathring{E} ? \sim ? \bullet [ \} \acute{A} \mathring{O}[ \ \ \ \ \ \ \mathring{A} ) * @ \bullet \mathring{a} \acute{A} ) = \mathring{a} \acute{A} (E \circ Q) + \mathring{a} (E \circ Q) + \mathring{a}$
- I €I HÁ V@ ÁYæç^Á/¦æ) ã ÁÛ^ c^{ ÁQY VÙ DÁ
- I € I Á Ôãc Á ÁT [ } c\* [ { ^!^ ËT [ } c\* [ { ^!^ ÁQE^æÁV;æ}• ãαÁÛ^• c\* { ÁQT OE/ÙDÁ
- $I \in I \land V \cdot \bullet \& ad[[\bullet ad\hat{O}[\ ] \land AUad \land \ ] *Aad \land Ad \land Ad \land AUad \land$
- I € Ϊ́Á ΟΤο@^}•ÁV¦æ)•ãσÁÛ^•c^{ ÁÇCE/ÙDÁ
- I €Í FÁ Ô@a} ^ IÁPāIIÁV¦æ} ãxÁCÔP V DÁ
- I €Í HÁ Õ¦^^} çã∥^ÁV¦æ} •ãαÁŒ co∰ ¦ã€ ÁQÕ VŒĐÁ
- $I \in I \land R[@] \cdot [] \land \hat{O} \in A' : a \cdot \hat{A} \cap A' \cdot a' \cdot \hat{A} \cap A' \cdot \hat{A} \cap$

- I € ÏÁ Ræ&\•[}Á\¦æ}•ãoÁŒc@;¦ãcÂQRVOĐÁ
- I € Í Ì Á Ôãc Á; Αΰ[{ ^Áν¦æ}•ãσΑ̈́Ο^]æd∢ ^}σΑ̈́Ο̈∪∇ΟΦΆ
- $1 \in \hat{1} \hat{A} \Rightarrow [ co@ \land \circ \hat{A}OE] \Rightarrow \Rightarrow \Rightarrow \hat{A}O[ \circ \land \hat{A}OE] \Rightarrow \Rightarrow \hat{A}O[ \circ \land \hat{A}OE] \Rightarrow \hat{A}O[$
- $I \in FA$   $\hat{O}$   $\hat{A} \cdot \hat{A} = \hat{A} \cdot \hat{A} = \hat{A} \cdot \hat{A} \cdot \hat{A} = \hat{A} \cdot \hat{A}$
- I €Ï HÁ ÁŠ^^Ëܡ••^||ÁÔ[ ˇ} &ãÁ ÁÕ[ ç^¦}{ ^} ♂ ÁÇŠÜÔUÕDÁ
- I €Ï IÁ Úæ-8{ÁÔ[ˇ} cੈÁÚˇà | &BÁV¦æ) •] [¦ææā[}ÁQÚÔÚVDÁ
- I €ÏÏÁ Ù[ĭo@ÁØ[¦ããæÁÜ^\*ã[}æþÁ¦æ)•][¦cææã[}ÁŒc@;¦ãĉÁQVÜŒÜæåpDÁ
- $I \in \stackrel{\circ}{l} \dot{A} = \stackrel{\circ}{l} = \stackrel{\circ}{l} \dot{A} = \stackrel{\circ}{l} = \stackrel{\circ}{$
- I € À Sã, \* ] [ ¦ αÁ Œ ^ æÁ V¦ æ) ã αÁ Û ^ α^ { Á
- I € Ì FÁ OE; å^¦•[} ÁV¦æ),•ãoÁOE o@; ¦ão Á
- I € Ì GÁ Ö [ \* | æ Á Ô [ \* } c Ü ã å ^ @ e ∳ Á Ç Ü ã å ^ @ e ∳ ^ DÁ
- I €ÌÎÁ T^d[][|ãæa;ÁÓˇ•ÁŒ co@;¦ãc ÁÇT ÓŒĐÁ
- I €ÌÏÁ ÖŸ¦@æ{ÁŒ!^æÁV¦æ}•ãxÁŒ c@;¦ãcÂÇÖŒ!/ŒDÁ
- I €Ì JÁ Ú@} ã¢ÁÔ㢠ÁÒ¢] ¦^••Á
- I € J GÁ Ô |æ \ çã | ^ Á / ¦æ } ã Á Û ^ c^ { Á ÇÔ V Ù DÁ
- I €J HÁ Õ¦^^}•à[¦[ÁV¦æ}•ã¢ÁŒc@;¦ãĉÁQÕVŒĐÁ
- I€JIÁ Ú "^¦d[ÁÜB&[ÁPªT@) æêÁse}åÁV¦æ)•][¦ææs¶}ÁŒC@Q¦ãcÁQÚÜPVŒDÁ
- I €JÏÁ Ô[ˇ} &āÁ;} ÁOE ā; \*Á; ~ÁÙ ŒŠŠ \*&ā ÊÁQ &ÈÇÔ V DÁ
- IF€€Á Ùæ) c^^Ávæc^\^ÁÜ^\*ã[}æ¢Á\;æ)•][¦cææã[}ÁCEc@;¦ãcÁQÙYÜVOÆDÁ
- IF€FÁ Ù]ælæa)à à '¦\*Á/¦æ)•ãaÁÛ ^• e^{ ÁÇÙÚOEÜ VOEDÁ
- IF€CÁ Yæ&&æ{æ, ÁÜ^\*ã}}æ∮Á\;æ}•][¦ææã}}ÁŒc@;lãcÁQV@ÁÔ[æ•cÁÜVOÆÁ

IF€HÁ Yã^\*¦æ•ÁV¦æ}•ãoÁŒc@;¦ãcÂ IF€IÁ Ù^}ã¦ÁÜ^•[\*¦&^ÁOE•[&ãææã]}ÊÁQ&ÈÈÙÜOĐÁ IF€ÍÁ Ö^]æd∢^}ơÁ,-Á√¦æ}•][¦œæðá}}Áæ)åÁÚ`à|æðÁY[¦\•ÁQÖVÚYDÁ IF€ÌÁ Ü^•^æt&@Á/¦ãæ}\*|^ÁÜ^\*ã[}ætÁÚ`à|&BÁ/¦æ}•][¦æætã[}ÁŒ œQ¦ãæ`ÁQ/VŒÐÁ IFF€Á Ô@æd|^•q[}ÁŒ!^æÁÜ^\*ā[}ædÁ/¦æ)•][¦ææā[}ÁŒ œ@;¦ãcÁQÔŒÜVŒÐÁ IFG(A) = G(A) = G(A)IFH€Á Tæ\$(}ËÓãààÁÔ(j\*)c°Á√¦æ)•ãóÁOE co@;¦ãc°ÁQT VOEÁWÁDÁ IFHFÁ Öæçãã•[}ÁÔ[ˇ}cÂV¦æ;•][¦ææãi}Á IFHHÁ Õ ã å ¼ ¦ å ÁÔ[ ˇ } c Á V¦ æ } • ] [ ¦ cæcãi } ÁQÕÔ VOET Ù DÁ IFHÍÁ  $\tilde{O}^{\dagger}$ ; \*  $\tilde{a}$ æÁÜ^\*  $\tilde{a}$ ;  $\hat{a}$ AÁV;  $\hat{a}$ a) • ] [ |  $\hat{a}$ ææ $\tilde{a}$ ;  $\hat{a}$ AÓE  $\hat{a}$ QÖÜVOEDÁ  $| FH \hat{A} = \tilde{O}(\tilde{a}) \wedge co \hat{O}(\tilde{a}) \wedge co \hat{O}(\tilde{a}) + \hat{A}(\tilde{b}) + \hat{A}(\tilde{b})$ IFI€Á Ô[||ã\:\ÁŒ^æÁ\:\æ}•ãÁQÔŒ\/DÁ IFIFÁ Ô^} dæpÁTæã|æa}å•ÁÜ^\*ã[}æpÁV¦æa)•ãxÁŒc@;¦æcÁÇÔTÜVŒÐÁ IFIIÁ ÁPæHÁŒ^æÁV¦æ;•ãcÁŒPŒVDÁ  $||F||\hat{A} - V||\hat{a}EO||^* + \hat{c}AO||^* + \hat{a}EAO||^* + \hat$ IFÍGÁ Tãæ;ãnŠæà∧•ÁnÖÁKÚÙOĐÁQ&BÁ IFÍHÁ TæláðocæÁEÉKÚÙÓEÁQ&EÁ IFÍJÁ Ü^\*ã[}æþÁ\¦æ)•][¦ææã[}ÁŒc@;¦ãĉÁÇÜVŒDÁ  $|| F\hat{I} J \hat{A} - \hat{I} \hat{I} \rangle \approx || \hat{A} \hat{U} || \approx || \hat{A} \rangle + || \hat{A} \hat{O} \hat{I} \rangle + |$ IFÏ €Á Ù[ ˇc@ æ cÁ\^}}^••^^ÁP ˇ{ æ} ÁÜ^•[ ˇ¦&^ÁŒ ^} & ÁÇÙÒVPÜŒÐÁ  $|F| FA = S | \phi c | A| A| B | | A$ IFÏGÁ Y^•¢^\}ÁÚā\å{ [} αÄÜ^\*ā[} æþÁ\;æ)•ãαÁŒ α@; ãc ÁQY ÚÜVŒĐÁ | IFÏ HÁ Úā^å{ [} ơÁŒ ơ@ ¦ãc Á[¦ÁÜ^\*ã[} æþÁ/¦æ)•][¦ææã[} ÁQÚŒÜVDÁ IFÏIÁ Tǐ} & Aladací Ál-Áladací Áladací Álada IFÏÍÁ Ú Ĭ^¦d[ÁÜ 38[ÁT æb 3663[^Á/læ)•][¦óÁOE co@¦ãô Á IFÏÌÁ V@^Á√¦æ}•][¦œæãi}ÁTæ}æ≛^{^}oÁOE•[&ãææãi}ÁÖ;[ĭ]ÁQ√TOEDÁ IFÌ€Á W}ãç^¦•ãĉÁįÁÕ^[¦\*ãæÁV¦æ)•ãcÂÛ^•c^{ÁÇVÕŒDÁ IFÌGÁ Tǐ} & Bajadací Ár-Á/[æÁÓædæáÁ  $| F | F | A = V@A \hat{O} \hat{ac} \hat{A} - A \hat{O} [ ] \hat{a} * A \hat{O} | A \hat{O} |$  $||F|||\hat{A}|| = \hat{A}(\hat{D}) \cdot \hat{A}(\hat{A}) \cdot \hat$ IFÌÎÁ ÔãCÁ;ÁT `¦-\^^•à[¦[ÁÇÜ[ç^\ÁÚ`à|ã&ÁV¦æ)•ãÆÁ IFÌÌÁ  $Xã* ã* ÁQ|æ; å• ÁÖ^]æ; <math>(^{\land})$   $(^{\land})$   $(^{\land})$   $(^{\land})$   $(^{\land})$   $(^{\land})$ 

- IFJFÁ V¦æ) ã đÓ E c Q l ã c Á ÁÔ^ } dæ ÁS^ } č & ^ Á
- IFJGÁ TælcajÁÔ[ˇ]cÂ
- Í€€FÁ Ôã¢Á, ÁŒ] | ^d; } ÆËXæ|\^Â/¦æ) •ãÆÁ
- Í€€GÁ Õ¦^^}ÁÓæÂÁT^d[ÁQÕÓTDÁ
- Í€€HÁ S^}[•@æÁV¦æ}•ãóÁQSVDÁ
- $\hat{I} \in \in \hat{A} \quad \check{S} = \hat{A} \cdot [\bullet \bullet \land \hat{A} \cdot \check{A} \cdot \check{A} \cdot \hat{A} \cdot \check{A} \cdot \hat{A} \cdot \hat{A}$
- Í€€ÍÁ T^d[Á\ˈæð,•ãAÛ^•c^{ÁQT^d[DÁ
- Í€É Á Ó^||^ÁW àæ}ÁÛ^•¢^{ ÁËÁÜæ&ã,^ÁQV@ÁÓ°•DÁ
- Í € È Á Tã, æ`\^^ÁÔ[`} c°Á√¦æ) •ã ÁÛ^• c^{ÁQTÔ VÙ DÁ
- Í € JÁ U•@ [•@ÁV¦æ)•ãAÛ^•¢^{ÁÇUVÙDÁ
- Í€F€Á T^d[ÁÜ^\*ã[}æ∮Á\¦æ)•ãaÁ0Ec@[¦ãĉÁQT^d[DÁ
- Í€FFÁ Ù cæ\ÁOE^æÁÜ^\*ã[}æ¢Á√¦æ)•ãcÁOE co@;¦ãcÂQÙOEÜ∨OEDÁ
- Í€FGÁ Ù[ˇc@, ^•cÁU@ĄTÁÜ^\*ā[}æpÁ\¦æ)•ãxÁOEc@, ¦ãcÂQÙUÜVOEÁDÁT^d[DÁ
- Í€FÍÁ V@ÁÕ¦^æe^¦ÁÔ|^ç^|æa}åÁÜ^\*ã[}æaÁV¦æa)•ãaÁŒc@(¦ããÁÇÕÔÜVŒÐÁ
- Í€FÎÁ Ô^}dæHÁU@AÁV¦æ)•ãaÁŒc@Q¦ãcÁQÔUVŒÐÁ
- Í €FÏÁ Õ¦^ææ^¦ÁÖæê ({} ÁÜ^\*ã{}) æþÁ/¦æð) •ãxÁŒ c@; åãĉ ÁÇÕÖÜVŒÐÁ
- Í €FJÁ ÔãC Á, ÁT ã å å | ^ d; } ÆÄT ã å å | ^ d; } Á ¦ æ} ã ÁÛ ° æ { ÁÇT VÙ DÁ
- $\hat{I} \in \text{CFA} \quad \hat{U}[ | \cos^* \triangle \hat{U}|^* + \hat{a} ] \Rightarrow \hat{A} \hat{U}|^* + \hat{a} ] \Rightarrow \hat{A} \hat{U}|^* + \hat{a} \hat{A} \hat{U}|$
- Í €CCÁ V[|^å[ÁOE^æÁÜ^\*ã[}æÁV¦æ]•ãAÓE cQQ¦ã£ÁQVOEÜVOEDÁ
- Í€GIÁ Y^•¢^\}ÁÜ^•^\;ç^Á/\;æ}•ãóÆCEc@\;iãc`ÁQYÜVOEDÁ
- Í€GÍÁ Ö"|"c@ÁV¦æ)•ãxÁŒc@Q¦ãcÂÇÖVOEDÁ
- Í €GÎÁ ÔãCÁ, ÁT [[¦@ æå ÉÄÖÓÓEKÁT ^d[][|ãæa) ÁŒ ^æÁV¦æ) ãxÁÇT ŒVDÁ
- Í€GÏÁ T^d[Á√¦æ))•ãcÁ
- Í€GJÁ Óæ∂ÁT^d[][|ãoæ)ÁV¦æ)•ãoÁOEcoQ¦ão°ÁQÓæ∂ÁT^d[DÁ
- Í€H€Á Óænd $^{\wedge}$ ÁÔ¦ $^{\wedge}$ \ÁV¦æ)•ãnÁQÓÔVDÁ
- Í€HFÁ Ù`à`¦àæ)ÁT[àããcîÁDEcQQ¦ãcîÁ[¦ÁÜ^\*ã[}æ)ÁV¦æ)•][¦cææã[}ÁQÙTOEÜVDÁ
- Í€HGÁ Tæ••ÁV¦æ}•][¦ææaã[}ÁOEco@;¦ãcÂOTVOEDÁ
- Í€HHÁ Qlo^¦ĭ¦àæ)ÁV¦æ)•ãnÁÚæò;}^¦•@3,ÁQV@^ÁÜæ)ãaDÁ
- Í€HIÁ ÔãCÁ,√ÁRæ&\•[}Á√¦æ}•][¦ææā[}Á0Ec@[¦ãcÁQRVOEDÁ
- Í€HÍÁ Sælæéæ [[ÁT^d[Á\ˈæð]•ãæÁ\Ĵ^•c^{ ÁQT^d[Á\ˈæð]•ãæÐÁ
- $\hat{\mathbf{I}} \in \hat{\mathbf{H}} \hat{\mathbf{A}} \quad \hat{\mathbf{O}} = \hat{\mathbf{a}} \hat{\mathbf{a}} \hat{\mathbf{c}} \hat{\mathbf{A}} \hat{\mathbf{O}} = \hat{\mathbf{c}} \hat{\mathbf{a}} \hat{\mathbf{c}} \hat{\mathbf{A}} \hat{\mathbf{C}} = \hat{\mathbf{c}} \hat$
- Í€HÏÁ Tˇ•\^\*[}ÁŒL^æÁV¦æ}•ãaÁÛ^•c^{ÁQTŒVÙDÁ
- Í€HÌÁ Þã∕∿ÁÖãæþËŒÜãã^Á
- Í€HJÁ Ùætājæ, Á√¦æ),•ãnÁŒco@¦ãnôÁÜ^\*āj}æ+ÁÙ^¦çã&^ÁQÙVŒÜÙDÁ
- Í€I€Á CE;}ÁOEà[¦ÁV¦æ;)•][¦cæeāi;}ÁOEcQ?¦ãc;ÁQDEDE/OEDÁ
- Í€IFÁ ÔãCÁ,√ÁOE, å^¦•[}Á√¦æ)•][¦œæã[}ÁÙ^•c^{ÁQÔOE/ÙDÁ
- Í€IGÁ Òæ•oÁÔ@3&æ\*[Á√¦æ)•ãnÁQÒÔVDÁ
- Í€IHÁ T^d[][|ãæa)ÁÒçæa)•çãi|^ÁV¦æa)•ãaÁÛ^•e^{AÓTÒVÙDÁ

- $\hat{\boldsymbol{\beta}} = \hat{\boldsymbol{\beta}} + \hat{\boldsymbol$
- $\hat{I} \triangleq \hat{I} \hat{A} \quad \tilde{O} \approx \hat{A} \hat{U} \hat{a} = \hat{A} \hat{U} \hat{a} = \hat{A} \hat{U} \hat{a} = \hat{A} \hat{A} \hat{U} \hat{A} \hat$
- Í€IÏÁ Ó|[[{ãj\*q[}ËÞ[¦{æþÁÚ`à|&&Á√¦æ)•ãaÁÚ^•c^{AÇÓËÞÚVÙDÁ
- $\hat{I} \in \hat{A} \quad \text{Q}_{\hat{a}} \hat{a} = \hat{A} = \hat{A} = \hat{A} + \hat{A} + \hat{A} + \hat{A} + \hat{A} + \hat{A} + \hat{A} = \hat{A} + \hat{A} + \hat{A} + \hat{A} = \hat{A} = \hat{A} + \hat{A} = \hat$
- $\text{$|\hat{\textbf{A}} \in \hat{\textbf{A}} \times \hat{\textbf{A}}$ are $$ \hat$
- Í€ÍHÁ V^¦¦^ÁPæĕc^ÁV¦æ),•ãoÁWcājāĉÁÇVPVWDÁ
- Í€ÍIÁ Tˇ}&ã\ÁQåãæ)æÁ√¦æ)•ãAÛ^•c^{ÁQTOVÙDÁ
- Í €ÍÎÁ Õ¦^æe^¦ÁÚ^[¦ãæÁTæ•Á/¦æ}•ãxÓÕã;dã&cÁÇÕãcŠã;\DÁ
- Í€ÍÏÁ Ü[&\ÁQ|æ)åÁÔ[ˇ}ởÁT^d[][|ãæ)ÁTæ•ÁV¦æ)•ãÁÖãdã&óÁÇT^d[Šã}\DÁ
- Í€ÍÌÁ Ü[&\-{¦åÁTæ••Á√¦æ)•ãxÁÖã•dã&cÁÇÜTVÖDÁ
- Í €Í JÁ Ù]¦āj\*-āN|åÁTæ••ÁV¦æ))•ão/Öãida®oÁQÙTVÖDÁ
- $\hat{I} \in \hat{I} \in \hat{A}$   $\hat{O} \otimes \{I\} = \hat{I} \times \hat$
- Í€ÎFÁ Ö^&æc°¦ÁÚ°à|æ3Á√¦æ}•ãaÁÚ^•c^{ÁQÖÚVÙDÁ
- Í€ÎÎÁ Ô@a&æt[Á√¦æ),•ãaÁŒc@;¦ãa°ÁÇÔVŒDÁ
- Í €ÌÌÁ Ù@à[^\*æ)Á\¦æ)•ãÁÛ^•c^{Á
- Í€JFÁ Yæi∙æiÁOE^æÁV¦æ)•ãaÁÙ^•c^{ ÁÇYOE/ÙDÁ
- Í€JGÁ ÔãcÂ,ÁÜ[&@•c^¦ÁÚ`à|ã&Á/¦æ)•][¦cæeã[}Á
- Í€JHÁ Šã[æÁOE∥^}ÁÔ[ˇ}c°ÁÜ^\*ã[}æAÁV¦æ}•ãcÁOEco@¦ãc°Á
- $\hat{I} \in \hat{J} \hat{A} + \hat{O} = \hat{A} + \hat$
- Í€JJÁ ÒæੱÁÔ|æãi^ÁV¦æ;•ãoÁQÒÔVDÁ
- ÍF€HÁ Þ[¦c@ÁV[\_} @āļÁj-ÁŠæà^ÁÔ[ˇ} c゚ÁÖãæþЁÜÆÜäã^Á
- ÍF€IÁ Þ[¦c@o-¦}ÁQQåãæa)æÁÔ[{{ čo^¦Á/¦æa}•][¦cææã[}ÁÖãidã&cÁQÞQÔVÖDÁ
- ÍF€ÌÁ Ræ}^•çã∥^ÁV¦æ}•ãαÁÙ^•c^{ ÁQRVÙDÁ
- ÍF€JÁ ÔãCÁ, ÁÓ^|[ãÓ\¦æ}•ãÓÛ^•c^{ ÁQÓVÙDÁ
- ÍFF€Á Ó|[[{ã,\*q[}ÁÚ`à|ã&ÁV¦æ)•][¦œæã[}ÁÔ[¦][¦ææã[}ÁQÓVDÁ
- ÍFFHÁ Úæ&AÁËÁÙ à 'làæ) ÁÓ ÁÖãçãa ãi } ÁQÚOEÔÒDÁ
- ÍFFÏÁ Šæà^dæ)Á
- ÍFFÌÁ Þ[¦c@:æecÁQqā;[ã:ÁÜ^\*ã[}æ;ÁÔ[{{ č°¦ÁÜæañ[[æå;ÁÔ[;][¦æañ[}ÁQT^dæðAÁ
- ÍFFJÁ ÔãCÁ,ÁÖ^d[ãÁÖ^]æd(^}oÁ,ÁV¦æ)•][¦ææã[}ÁÇÖÖUVDÁ
- ÍFHFÁ U]][¦č}ãcÃÒ}c^\]¦ãr^•ÉÁQ&ÈÇUÒDÁ
- Í FHGÁ V, ã ÁÔãã ÁŒ ÆÁV; æ; •] [ | cæaã } ÁŒ c@ | ãc ÁQ ÓŒ OŒ ÓŒ Ó
- ÍFIFÁ Ö^d[ãoÁ√¦æ)•][¦œæã[}ÁÔ[¦][¦ææã[}ÁQÖ^d[ãoÁÚ^[]|^ÁT[ç^¦DÁ
- ÍFIHÁ Ó¦`}• , & ÁV¦æ)•ã ÁŒC+'}æãç^ÁQÓVŒÁ
- ÍFIÍÁ ÔãCÁAÁS[\[{ [ÁQÔUSDÁ
- ÍFIÎÁ Tæåã[}ÁÔ[ˇ}cÂV¦æ)•ão/Öãcdæ3cóQTÔVDÁ
- ÍFIÌÁ Ó|ˇ^ÁYæe^¦ÁŒE^æÁv¦æ;•][¦œæã[}ÁÔ[{{ã•ã[}}ÁQÓ|ˇ^ÁYæe^¦ÁŒE^æÁv¦æ;•ãŒÁ
- ÍFIJÁ T&13&@26e)æÁ0E^æÁ0[\*}&2ÁÁ;~ÁÕ[ç^¦}{^}o•ÁQT0EÔUÕDÁ
- ÍFÍIÁ T^d[][|ãæ+)ÁÔ[ˇ}&ãAÁ
- ÍFÍÍÁ T^d[ÁT[àájācÁ

- Í FÍÌÁ W; ãç^;•ãcÂ;Á-ÁT &&@#a;ÁÚæ;\ã;\*Áæ;åÁ/;æ;•][;cææā;}ÁÛ^;ç&&^•ÁQWT VÙDÁ
- ÍFÍJÁ Üãç^¦ÁXæ∯^^ÁT^d[ÁTæ••ÁV¦æ}•ãó√Öã:dã&óÁÇÜXTTVÖDÁ
- ÍF΀Á Yæe@a,\*d;}ÁÔ[ˇ}ĉÁ√¦æa)•ãcÁ
- Í FÎ FÁ U: &\^^ÁÔ[ `} c Á/; & ãÁÙ^; c & ÁCUÔVÙDÁ
- ÍFÎGÁ V¦æ}•Ú[¦c^Á
- Í FÎ HÁ Šã& ða \*ÁÔ[ \* ) c Á/¦æ) ã ÁÓ[ æ å ÁÇŠÔ VÓ DÁ
- Í FÎ Í Á Õ : ^^ } ^ ÁÔ [ ˇ } cˆ Á / ; æ} ã ⁄ Ó [ æ å Á ÇÕ ; ^^ } ^ ÁÔ Œ / Ù DÁ
- $|\hat{F}|\hat{A} \hat{O}|^{1} = |\hat{A}|^{2} + |\hat{A}$
- ÍFÎÏÁ Ù[ˇơ@ÁŠæà^ÁÔ[ˇ}ởÁÔ[{{{ˇ}}ãớÁÛ^¦çã&^•ÊÁQ&ÈÇÙŠÔÔÙDÁ
- ÍFÎJÁ Tãæ{ãÃÔ[ˇ}cÂÚˇà|ã&ÁV¦æ}•ãxÁQTÔÚVDÁ
- ÍFÏFÁ Ø[}åÁå\*ÁŠæ&ÁŒA\*æÁV¦æ)•ãóÁØZ[}åÁå\*ÁŠæ&ÁŒA\*æÁV¦æ)•ãÆÁ
- ÍFÏIÁ ÔãCÁ, ÁÖæ) çã||^EÖæ) çã||^ÁTæ•Á/¦æ)•ãÁ(ÖTVDÁ
- ÍFÏÎÁ ÔãCÁ, ÁÖ^Sæ†àÁÇÖÙŒ/ÙDÁ
- ÍFÌ€Á Šãçã; \*• d;  $A\hat{O}$ ••^} cãædÁ/¦æ;•][¦cææã;  $A\hat{U}$ ^¦çã&^ÁQŠÒVÙDÁ
- ÍFÌFÁ ÔãCÁ,ÁÕ¦æ)åÁPæç^}ÁPædà[¦ÁV¦æ)•ãnÁ
- ÍFÌGÁ Úæ&NËÙ à 'kàæ)ÁÓ •ÁÖãçããā[}ÊÐGÖÐÁÚækædæ)•ãAÚNkç&KN•ÁQÚŒĐÔÐÁ
- ÍFÌHÁ ÔãcÂ(ÁXæ)]ækæē[Á
- ÍFÌIÁ Tæ\$ænææ,æÁOE^æÁÖ¢]¦^••ÁV¦æ;•][¦æænā[}ÁOEco@;¦ãcÁQTCEÝDÁ
- ÍFÌJÁ T&R@atæ)ÁÖ^]ædd(^}on{\-Á\'æ)•][\cænat]AQTÖUVDÁ
- ÍFJGÁ ÞY QÁÜ^\*ã[}æþÁÓ\*•ÁŒ c@P¦ãc Á
- ÍFJÍÁ ÔãCÁAÂÚ@ |à Á
- Î €€FÁ OE, æ¦āl| ÁÔã¢ÁV¦æ; •ãxÁQCEÔVDÁ
- $\hat{I} \in \in \hat{A} \land T = \bullet \land \hat{A} \mid \exists \hat{A} \bullet \hat{a} \land \hat{A} \mid \exists \hat{A} \bullet \hat{A} \mid \hat{A} \mid$
- Î⊖EÏÁ Ø[¦oÁY[¦o@ÁV¦æ)•][¦œæā[}ÁOEo@[¦ãcÁQV@^Á/DÁ
- Î⊖⊖ÈÁ T^d[][|ãæa)Á√¦æ)•ãxÁ0EcoQ¦ãôÁ,-ÁPæb¦ã-ÁÔ[ˇ}ổÊĀV^¢æe-ÁÇT^d[DÁ
- Î €€JÁ Šæ\$^å[Á/¦æ}•ãaÁTæ}æ\*^{ ^}dÊÁQ&ÈÇÒ|ÁT^d[DÁ
- Î €F€Á ÔãC Á/¦æ}•ã0ÁTæ}æ\*^{^}0Ó[{]æ}^ÊÁQ&ÈÇÔãããa`•DÁ
- ΀FFÁ XOQEÁT^d[][|ãzæ)ÁV¦æ)•ãxÁQXOQEDÁ
- ΀FGÁ Yæ&IÁV¦æ),•ãaÁÚ^•e^{ÊÁQ,&ÈCYVÙDÁ
- Î €FHÁ Ú[¦ơÁŒc@¦ÁV¦æ)•ãơÁŒÚŒVDÁ
- ΀FIÁ ÔãĉÁ;ÁÓ¦[¸}•çã|/ÁËÓ¦[¸}•çã|/ÁN;àæ;ÁÙ^•c^{ÁÇÓWÙDÁ
- ΀FÍÁ Qe|æ}åÁV¦æ}•ãaÁQZÁVDÁ
- ΀FÎÁ Ó^œĕ{[}œÁT`}&&ajæÁV¦æ)•ãóÁÛ^•c^{ÁQÓTVDÁ
- Î. €FÏÁ Ô^}dæAÁU\|æ@?{æÁV¦æ}•][¦œæãi}Áæ)åÁÚæd\ã;\*ÁŒc@;¦ãĉÁÇÔUVÚŒÐÁ
- ΀FÌÁ T^d[][|ãæa)ÁV`|•æÁV¦æa)•ãóÁOEco@¦ãcÁQTVVOEDÁ
- ΀FJÁ ŒÓÛÁÜãå^ÁÇŒÓÛÁÜãå^DÁ
- ΀G€Á Ô¦^•&^}oÔāĉÁÔ[}}^&a[}AÖ[ŏjAn]AÖāçãā]AÖäçãā;AÖ;ããæ;a#Ö^]æd;^}o4;AÁ/æ;•][¦œæā;AÁÇÔÔÔÖDÁ
- ΀GGÁ Ôæ}ãæaþÁOE^æÁV¦æ;•ãxÁÚ^•¢^{ÁQÔOE/ÙDÁ

- ΀GIÁ Ù@^ç^][¦αÁŒP^æÁV¦æ)•ãαÁÛ^•α^{ÁÇÙ][¦V¦æ)DÁ
- ΀GÍÁ ÔãĉÁ;ÁOE^¢æ)å¦ãæÁÇOEdæ)•DÁ
- Î €GÎ Á ÔãCÂ(ÁT[}¦[^ÁV¦æ)•ãAÛ^•c^{ ÁÇT VÙ DÁ
- ΀HGÁ Þ^, ÁU¦|^æ}•ÁÜ^\*ã[}æ|ÁV¦æ}•ãóKEc@¦¦ãĉÁQÞUÜVŒÐÁ
- Î €HHÁ Ô^} dæµÁŒ!\æ)•æ•Á/¦æ)•ãxÁŒ c@;¦ãc`ÁÇÔŒ!/ŒÐÁ
- ΀HÍÁ Yã&@ãæÁØæ∮•Á√¦æ)•ãAÛ^•c^{Á
- ΀HÌÁ Šææê^œ^ÁV¦æ}•ãÁÛ^•c^{ÁÇŠVÙDÁ
- Î € 1 €Á 0 0 6a â^} ^ Á√¦ 2a) ã 2ÁÛ^ c^{ ÁÇÔ ã ĉ Šã, \ DÁ
- Î €I FÁ Pæ) åãdæ) ÁÛ] ^&ãæ ÁV¦æ) •ão ÁÖãçãa ãi} ÁËZÔãc Ái-ÁOE|ã; \*d;}ÁQPæ) åãdæ) DÁ
- Î∈IÌÁ Ôæ), ãæ, ÁT^d[][|ãæ, ÁV¦æ), •][¦ææã, }ÁOEc@, ¦ãĉ ÁQÔTVOEDÁ
- Î €IJÁ ŠærÁÔ¦\*&^•ÁŒL^æÁV¦æ);•ãAÁÜÜ[æå,ÜWÞÞÒÜÁV¦æ);•ãÆDÁ
- Î €Í FÁ Ô[¦] ˇ•ÁÔ @ã cãÁÜ^\*ã[}æ‡Á\¦æ)•] [¦cæcã[}ÁOE co@;¦ãc ÁQV@ ÁÓDÁ
- Î €Î Î Á Öæq|æ ÁŒ, æÁÜæ; ãã ÁV¦æ; •ã ÁÇÖŒÜVDÁ
- Î €ÍÌÁ ÙoĐÁÓ^¦}æ¦åÁWiàæ)ÁÜæjlãåÁ√¦æ))•ãrÁ
- Î €Í JÁ Ó ¦æ [•Á '|æ)•ã Ó Õã dã CÁÇ V @ ÁÖã dã CĐÁ
- $\hat{I} \in \hat{G} \times W \hat{a}_{1}^{\wedge} \cdot \hat{a}_{2}^{\wedge} \cdot \hat{a}_{3}^{\wedge} \cdot \hat{a}_{4}^{\wedge} \times \hat{a}_{4}^{\wedge} \cdot \hat{a$
- $\hat{1} \in \hat{1} \hat{A} = \hat{O} = \hat{A} \cdot \hat{A} \hat{O} = \hat{A} \cdot \hat{A} \hat{O} = \hat{A} \cdot \hat{A} \hat{O} = \hat{A} \hat{A} \hat{O} = \hat{A} \hat{O} =$
- Î €Ï €Á ÔãC Á, ÁT ^• ˘ ãc^ÁÇT VÒÖ ĐÁ
- Î €Ï GÁ U:æ\ÁÜ^\*ã[}æţÁV¦æ),•ãaÁCUÜVDÁ
- Î TÎ Ä Ùæ) cæÁØ^ÁV¦æði•ÁÖðic Á, ÁÙæ) cæÁØ^ÁQÙØVDÁ
- Î €À V^¦¦^à[}}^ÁÚædãn@ÁÔ[}•[|ããæec^åÁÕ[ç^¦}{ ^}oÁ
- Î €Ì FÁ Š[}\*çã\ Á\¦æ}•ãoÁ
- $\hat{I} \in \hat{G} \times \hat{O} \times$
- Î €Ì I Á Öællæ ÆÆXÚÙŒÆQ&ÆÁ
- ΀ÌÎÁ Ø[¦œÁÙ{ão@ÁV¦æ}•ãoÁQØÙVDÁ
- $\hat{1} \triangleq \hat{1} \hat{A} + R^* A^* = [\hat{A} \hat{U} \Rightarrow \hat{a} \otimes \hat{O}^*] \Rightarrow (^*) \circ A \hat{A} + A^* = \hat{a} \hat{A} \otimes \hat{A} = \hat{a} \hat{a} \otimes \hat{A} = \hat{a} \hat{A} \otimes \hat{A} = \hat{A} \otimes \hat{A} \otimes \hat{A} = \hat{A} \otimes \hat{A} \otimes \hat{A} = \hat{A} \otimes \hat{A} \otimes \hat{A} \otimes \hat{A} = \hat{A} \otimes \hat{A} \otimes$
- Î €Ì JÁ ÔãC Á ÁV^ |^¦Á
- ΀J€Á Š[、^¦ÁÜ4[ÁÕ¦æ)å^ÁXæ||^^ÁÖ^ç^|[]{^}♂ÁÔ[ˇ}&AÁQŠÜÕXÖÔDÁ
- ΀JFÁ Pã|ÁÔ[ˇ} d^Á/¦æ), •ãoÁÖã da&oÁQV@ÁP[] DÁ
- ΀JIÁ V@ÁŠæ, d[}ÁŒE^æÁV¦æ)•ãAÛ^•e^{AÇŠŒE/ÙDÁ
- ΀JÍÁ Õ[|å^}ÁÔ¦^•&^}αÓ¦^\*4[}æĄÁÚ|æ≱}∄,\*ÁÔ[{{ã•4[}ÁÇXΘÔVUÜΘΟΕÁVÜΟΕÞÙΟ\/DÁ
- ΀JÎÁ Ô|^ç^|æ)¦åÁŒ!^æÁÜæ)¦ãåÁV¦æ),•ãóAQÔŒÜVDÁ
- ΀JÏÁ Tãa|æ}åËJå^∙∙æÁWàæ}ÁV¦æ}∙ãó/Öãrd&kóÁQÒZÁÜ QÖÖÜDÁ
- ΀JJÁ ÔãCÁ,~ÁT&OE∐^}ÁEÁT&OEL^}ÁÒ¢]¦^••Á√¦æ}•ãAÁ
- $\hat{I} F \in F A \quad \ddot{O} \setminus \{d\} A \hat{O}[\hat{A}] + \hat$
- ÎF€GÁ Ô[}&@!ÁXæ#|^^ÁV¦æ;)•ãaÁÖãidã&cÁQÔXVÖDÁ
- ÎF€HÁ Ø[¦0ÁÓ^}åÁÔ[ĭ}cîÁÚ\*à|&BÁV¦æ)•][¦cæeā[}ÁQØ[¦0ÁÓ^}åÁV¦æ)•ãEDÁ
- ÎF€ÍÁ Qudæ&ãcÁ√læ)•ãoÁ
- ÎF€ÏÁ V^¢[{æÁQE^æÁÚæbædædæ}•ãaÁÚ^•c^{ÊÁQ&AQVQEÚÙDÁ
- ÎFF€Á Ô[||ã, ÁÔ[ˇ] c゚ ÁÔ[{{ãoc^^Á;}} ÁQÊã, \*ÁQÔÔQËÜ V DÁ

- ÎFFFÁ ÜÃIÁT^d[ÁÜ^\*ÃI}æţÁV¦æ;•ãøďÖã;dækoÁQÜTÜVÖDÁ
- ÎFFHÁ ÔãCÁ, ÁÔ|^à`¦}^Á
- ÎFFIÁ ÙVŒÜÁV¦æ)•ãrÁ
- ÎFFÍÁ Ú à | 38ÁV ¦ æ } 36ÁÚ \ ¦ ç 38 \ Á
- ÎFFÎÁ Ù]^&aadÁÚ¦[\*¦æ{•Á;¦ÁŒã;\*Áp^^å•Á
- Ï€€FÁ ÙœdV¦æ)Á
- Ï €€GÁ V¦æ}•ãxÁŒc@¦ãcÂ;ÁJ4Ú{æ@æÁQTCEVDÁ
- Ï €€HÁ ÔãC ÁN CĐÃÃà Á ÂÛ] ¦Đ, \* à P | Å ÁÇV @ ÁÓ \* ĐÁ
- Ï €€ÍÁ Sæ) •æ•ÁÔãĉÁOE^æÁV¦æ) •][¦ææā[}ÁOE c@;¦ãĉÁÇSÔOE/OEDÁ
- Ï € ÎÁ Ó ÂËÙ cæe^ ÁÖ^ ç^|[] { ^} cÁOE^ ^} & ÂÇT Ò VÜU DÁ
- Ï€EÏÁ Ó^œ^}å[¦-ÁV¦æ)•ãαÂÛ^•¢^{ÁQÓVDÁ
- Ï €€ÌÁ Ô^忦ÁÜæ¦ãã•ÁV¦æ;)•ãoÁQÔÜVDÁ
- Ï €€JÁ Öæg^}][¦ơÁÚˇà|æðÁV¦æð•ãaÁQÔQYQÓWÙDÁ
- Ï €F€Á Ö^•ÁT [ã, ^•ÁŒ^æÁÜ^\*ã]}æÁ√¦æ)•ãσÁŒ c@;¦ãc ÁÇÖŒÜ∨DÁ
- Ï€FFÁ ÔãcÂÁÁÖ°à°°^ÁGS^^Šã!^DÁ
- Ï €FGÁ Ùã, ¢ÁÔã; Á\;æ; •ãÁÛ, e\{ÁQÛÔVÙDÁ
- Ï €FHÁ T^d[][|ãæa) Á√læa) •ãαÁ0E α@, ¦ãĉ Áμ -ÁÓ|æ&λ ÁPæ, ∖ÁÔ[ˇ} ĉ ÁÇT Ò VÁ√læ) •ãαDÁ
- $\ddot{\parallel} \in \text{FI A} \quad \forall \text{[] } \land \text{($a$)} \land \text{($a$)} \bullet \tilde{\textbf{a}} \land \tilde{\textbf{0}} \land \tilde{\textbf{0}} \text{($a$)} \bullet \tilde{\textbf{0}} \land \tilde{\textbf{0}} \text{($a$)} \bullet \tilde{\textbf{0}} \text{($a$)} \bullet \tilde{\textbf{0}} \land \tilde{\textbf{0}} \land \tilde{\textbf{0}} \land \tilde{\textbf{0}} \text{($a$)} \bullet \tilde{\textbf{0}} \land \tilde$
- Ï€FÍÁ Yã&@āæÁV¦æ)•ãóÁQYVDÁ
- Ï€FÎÁ Ô[|ˇ{àãæÁV¦æ}•ãaÁÇÔVDÁ
- Ï€FÌÁ QQ. æÁÔãcÁV¦æ),•ãcÁQCÔVDÁ
- Ï€FJÁ W}ãç^¦∙ãĉÁįÁQ¸æÁÇÔæ{à`∙DÁ
- Ï €H€Á Ô[¦æþçã|^Á/¦æ)•ãÁÛ^•c^{ ÁQÔVÙDÁ
- Ï €HGÁ ÙdŽÁR[•^]@ÁV¦æ}•ãAÁÇV@AÜãã^DÁ
- $\ddot{\mathbf{H}} = \mathbf{H} \dot{\mathbf{A}} \quad \mathbf{R} \cdot \mathbf{Q} \cdot \mathbf{E} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{C}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{C}} \dot{\mathbf{C}} \dot{\mathbf{A}} \dot{\mathbf{C}} \dot{\mathbf{C}}$
- Ï€HÏÁ ÔãĉÁ,AŠãa^¦cÂ
- Ï€I€Á ÔãĉÁj-ÁR[]|ãjÁT^d[ÁOE^æÁÚ\*à|ã&Á
- Ï €I FÁ OŒ, ^•ÁV¦æ),•ãxÁOÊ\*^}&°ÁQÔ°Üãã^DÁ
- Ï€IHÁ ÔãCÁIÁR^~~\¦•[}ÁQRÒØØVÜŒÞDÁ
- Ï€ÍÁ R[@]•[}ÁÔ[ˇ}ĉÁÙÒŒVÙÁ
- Ï € Ï Á W}ãã à ÅÕ[ç^¦}{ ^} œÁ ';æ} •ã ÆÖ^]æ;d ^} œÁ
- Ï€ÌÁ ÔãcÂ(√Êæ; \^}&^Á
- Ì€€FÁ Wcæ@ÁV¦æ}•ãaÁŒc@;¦ãc;ÁÇWWOEDÁ
- Ì €€GÁ Ù Á/¦æ) ÁŠŠÔÁ&àæHÁÙãI ¢ÁŒL^æÁT^d[ÁQÙŒTDÁ
- Ì€€HÁ ÔãCÁ, ÁØæd\*[ÊÄÖÓOEÁÁT^d[][|ãææ)ÁŒ,^æÁV¦æ)•ãAÁCTOE/DÁ
- Ì €€IÁ Óã|ā; \*•ÁT^d[][|ãæa;ÁV¦æ;•ãxÁQÓā|ā; \*•ÁTÒVÁV¦æ;•ãxÁQÁ
- Ì⊖∈ÍÁ T[ˇ}cæã,ÁT^d[][|ãæa,ÁV¦æ),∙ãcÁQTTVDÁ
- Ì €€ÎÁ Ö^}ç^¦ÁÜ^\*ã[}æ¢Á/¦æ;•][¦ææã[}ÁÖã;dã&cÁÇÜVÖDÁ
- Ì €€Ï Á Ú \* ^ à|[Á ′ ¦ æ} ã Á Û ^ c^{ Á QÚ V DÁ
- Ì€€ÌÁ ÔããA•ÁOE^æÁV¦æ)•ãAÁÇÔOEVDÁ

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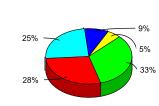
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- JFIIÁ Šãç^¦{ [¦^ÁDÁOE; æå[¦ÁXæl|^^ÁV¦æ)•ãDÁOE; o@;¦ãc ÁÇŠOEXVOEDÁ
- JFIÎÁ Ø[[c@a∥ÁV¦æ),∙ãcÁ
- JFIÏÁ ÔãcÂÁÁŠ[•ÁŒ;\*^|^•ÁÖ^]æd;^}oÁÁÁ/æ;•][¦ææði}ÁÇŠŒÖUVDÁ
- JFIÌÁ Xã&f¦ÁXæf|^ÁV¦æf•ãAÓE f0Q°¦ãC ÁQXXVOEDÁ
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- JFÍÍÁ ÔãCÁ, ÁÙA; ÁŠ ã ÁUÀā] [ÁQÙŠUÁ/¦A; •ãĐÁ

JFÍÏÁ 028&^••ÁÛ^¦çã&^•ÁQ&[¦][¦ææ^åÁQCEÙODÁ  $JFÍJÁ Y^{\bullet} \circ^{\downarrow} \} \hat{AO}[ \cdot dae\hat{O}[ \cdot cae\hat{A} \cdot ae] \cdot \tilde{a}\hat{AOE} \circ^{\downarrow} \circ \tilde{a}\hat{AOE} \circ$  $JF\hat{I} GA V@A\hat{O} @e^{A} \} \hat{AO}[\} dae\hat{O}[\bullet caeA' | ae] \bullet \tilde{a}AOE coQ | \tilde{a}\hat{a}AO' | \tilde{a}AO' | caeA' | ae] \bullet \tilde{a}DA$ JFÎIÁ X^}c'¦æÁQcº¦&ãcÂÛ^¦çã&^ÁV¦æ}•ãcÁŒc@;¦ãcÂQXQÙVŒÐÁ JFÎÍÁ V@ \* • æ) åÁUæ) • ÁV¦æ) • ãÁÇVUVDÁ JFÎÎÁ ŠOĐÔT VOĐÁŽÔU{æ||ÁU]^¦æe[¦•ÁQŠOĐÔT VOĐÁ JFÎÏÁ ÖæçãrÁÔ[{{ ັ}}ãcÂV¦æ}•ãcÁ JFÎJÁ Ú@!^}ã¢ÆÄXÚÙŒÆQ&ÈÁ JFÏ FÁ Ùæ) æðÔ æðæÁV; æ) • ã ÁÇ ÚÔ V DÁ  $JF\ddot{G}A = \hat{O}ac^{2}A_{1}A^{2}/A^{2} - ac^{2}A_{2} + ac^$ JFÏ HÁ T^\\&^\\a\\document\overline{\Omega}\) \cdot \document\overline{\Omega}\) \cdot \document\overline{\Omega}\) \document\overli JFÏĴÁ P[}[ľľÁÆÁKÚÙŒÁQ&ÉÁ JFÌGÁ OFFCæ{[}oÁÔ[{{ čo\ÁÔ¢]¦^••ÁQCHÔÒDÁ JFJFÁ V[] } ÁL-ÁU : [ÁXæ||^^ÁEÁV | æ) • ãxÁÙ ^ | çãx^ • ÁÖãçã ã } Á  $JFJGA = \ddot{Y} {$   $exAT \land d[][[\tilde{a}ze] AU[ex] } \tilde{a} * AU[*ex] \tilde{a} exetal } AQ\ddot{Y} T UUDA$ JFJHÁ Ô@ |æÁXã œæÁV¦æ) •ã ÁÇÔXVDÁ JFJÎ Á Ú $|a&A^{\dagger}|$   $\hat{AO}$ [ $^{\dagger}$ ]  $\hat{AO}$ [JFJÌÁ ÔãCÁ; ÁÚ[¦ơ¦çã|/ÁQÔÈUÈŠÈ/ÈÁ JG€€Á Sã; \*•ÁÔ[\*} c°ÁŒ^æÁÚ\*à|ã&ÁV¦æ;•ãzÁŒ^}&°ÁÇSŒÜVDÁ JGEFÁ ÔãCÁ, ÁV : | [& ÁÇÓŠOEÙ VÁSE) ª ÁÖCEÜ V DÁ JG€ÍÁ ÔãĉÁ; -ÁÒ|\ÁÕ¦[ç^ÁQ·dæ; DÁ JGEÎÁ Ùæ)ÁŠ ãÁÚàã][ÁÜ^\*ã]}æ)ÁV¦æ)•ãÁŒc@;¦ãcÁÜŠUÜVŒÐÁ JG€JÁ Xæa∥^^ÁT^d[ÁÜæañÉÁQ&ÈÈXTÜDÁ JOFFÁ OB; æ@@ã[Áv¦æ)•][¦œæã[}Áp^c;[¦\ÁQOEVÞDÁ JOFHÁ ÔãCÁ, ÁÚ^cæt {æÁÇÚ^cæt {æÁV¦æ}•ãdDÁ  $JGFI \acute{A} = \hat{O}a\hat{c} \acute{A} + \hat{A}U^{\hat{a}} + \hat{A}U$ JGG€Á ÔãĉÁ;ÁØ[|•[{Á  $JGGGA U\tilde{a} \approx \hat{A}OE \cdot [8\tilde{a}ee\tilde{a}] \hat{A} + \hat{A}\tilde{O}[\varsigma^{\wedge}] \{ ^{\wedge} \} \circ \hat{A}$ JOGHÁ Úælædædæ)•ãaÉÁQu&EÁ JGGÍÁ Ùæ)ÁØlæ)&ã-&[ÁÓæôÁŒ-AÓE-\æÁVæ× ÁÓ} ∞¦ ÅÔ; ^¦\* ^} & ÂÓ¦æ)•][¦ææãi}ÁŒ o@; ¦ãôÁ  $JGG\hat{A} = Q \cdot |A| = A\hat{O}[X \cdot A' \cdot A \cdot A' \cdot A \cdot A' \cdot A' \cdot A \cdot A' \cdot A'$ Á

### Appendix A

#### 2011 National Transit Profile Summary - All Agencies

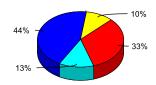
General Information (Millions)		Financial Information (Millions)	
Service Consumption Annual Unlinked Trips	10.085.4	Fare Revenues Earned Sources of Operating Funds Expended	\$13,189.5
Allinda Offinikoa Tripo	10,000.4	Fare Revenues (33%) Local Funds (28%)	\$13,114.4 \$11,228.4
Service Supplied		State Funds (25%)	\$9,740.3
Annual Vehicle Revenue Miles	3,914.8	Federal Assistance (9%) (***)	\$3,571.3
Annual Vehicle Revenue Hours	260.5	Other Funds (5%)	\$2,021.5
Vehicles Operated in Maximum Service	110,527	Total Operating Funds Expended Sources of Capital Funds Expended	\$39,675.9
Summary Operating Expenses (Millions)		Local Funds (33%) State Funds (13%)	\$5,125.8 \$2.047.6
Total Operating Expenses	36,008.9	Federal Assistance (44%) (***) Other Funds (10%) Total Capital Funds Expended	\$6,926.3 \$1,619.3 \$15,719.0



Sources of

Operating Funds Expended





Vehicles Operated in Maximum Service and Uses of Capital Funds

P	۵rf	ormar	nce M	اعدما	ırac

							Unlinked	Unlinked
				Operating	Operating		Passenger Trips	Passenger Trips
				Expense per	Expense per	Operating	per Vehicle	per Vehicle
				Vehicle	Vehicle	Expense per	Revenue	Revenue
	Directly	Purchased		Revenue	Revenue	Unlinked	Mile	Hour
Mode	Operated	Transportation	Total	Mile	Hour	Passenger Trip		
Bus	41,555	7,893	\$3,955.2	\$10.0	\$123.7	\$3.6	2.8	34.1
Heavy Rail	9,057	32	\$5,455.0	\$10.5	\$210.1	\$1.8	5.7	114.9
Commuter Rail	4,867	1,192	\$2,448.2	\$15.0	\$490.6	\$10.1	1.5	48.5
Demand Response	6,876	17,120	\$247.8	\$4.5	\$64.5	\$32.7	0.1	2.0
Demand Response - Taxi	0	4,070	\$0.5	\$3.9	\$48.7	\$21.8	0.2	2.2
Light Rail	1,233	94	\$3,036.0	\$16.0	\$248.4	\$3.2	5.0	77.5
Ferryboat	70	38	\$264.1	\$159.6	\$1,442.2	\$8.3	19.2	173.3
Trolleybus	404	0	\$26.8	\$20.8	\$147.2	\$2.4	8.8	62.1
Cable Car	27	0	\$12.5	\$194.1	\$381.4	\$7.9	24.6	48.3
Vanpool	7,028	4,401	\$25.0	\$0.8	\$33.7	\$4.8	0.2	7.1
Monorail/Automated Gui	38	4	\$6.5	\$22.1	\$237.9	\$3.2	7.0	75.5
Publico	0	3,259	\$0.0	\$1.5	\$17.7	\$1.5	1.0	12.2
Inclined Plane	6	2	\$0.7	\$41.6	\$131.0	\$1.6	25.9	81.5
Alaska Railroad	30	0	\$7.9	\$33.1	\$617.3	\$28.5	1.2	21.6
Bus Rapid Transit	45	14	\$59.9	\$11.2	\$141.8	\$3.4	3.3	41.3
Commuter Bus	350	619	\$130.5	\$6.6	\$172.9	\$7.9	0.8	22.0
Street Car Rail	152	22	\$34.1	\$21.8	\$179.5	\$2.5	8.8	71.9
Hybrid Rail	0	29	\$5.7	\$27.7	\$653.4	\$10.0	2.8	65.4
Total	71,738	38,789	\$15,716.3					

			Uses of					Vehicles
	Operating	Fare	Capital	Annual Vehicle	Annual Unlinked		Average	Operated in
	Expenses	Revenues	Funds	Revenue Miles	Trips (Millions)	Annual Vehicle	Fleet Age	Maximum
Mode	(Millions)	(Millions)	(Millions)	(Millions)		Revenue Hours	in Years	Service
Bus	\$18,504.9	\$5,119.4	\$3,955.2	1,851.1	5,101.3	149.6	7.4	49,448
Heavy Rail	\$6,669.1	\$4,401.8	\$5,455.0	636.3	3,647.1	31.7	19.2	9,089
Commuter Rail	\$4,668.8	\$2,434.2	\$2,448.2	311.2	461.3	9.5	19.3	6,059
Demand Response	\$3,173.6	\$230.2	\$247.8	711.5	96.9	49.2	3.7	23,996
Demand Response - Taxi	\$116.7	\$11.7	\$0.5	29.9	5.4	2.4	N/A	4,070
Light Rail	\$1,393.0	\$418.1	\$3,036.0	87.3	434.5	5.6	14.0	1,327
Ferryboat	\$518.3	\$124.0	\$264.1	3.2	62.3	0.4	20.3	108
Trolleybus	\$232.6	\$84.3	\$26.8	11.2	98.2	1.6	11.4	404
Cable Car	\$55.7	\$24.9	\$12.5	0.3	7.0	0.1	101.7	27
Vanpool	\$158.5	\$99.8	\$25.0	190.2	33.4	4.7	3.2	11,429
Monorail/Automated Gui	\$43.8	\$4.4	\$6.5	2.0	13.9	0.2	17.9	42
Publico	\$56.3	\$55.2	\$0.0	37.8	38.7	3.2	N/A	3,259
Inclined Plane	\$2.5	\$3.8	\$0.7	0.1	1.6	0.0	81.5	8
Alaska Railroad	\$3.3	\$1.4	\$7.9	0.1	0.1	0.0	23.5	30
Bus Rapid Transit	\$21.0	\$4.8	\$59.9	1.9	6.1	0.1	1.9	59
Commuter Bus	\$224.7	\$126.6	\$130.5	33.9	28.6	1.3	7.4	969
Street Car Rail	\$108.5	\$38.6	\$34.1	5.0	43.5	0.6	38.9	174
Hybrid Rail	\$57.6	\$6.2	\$5.7	2.1	5.8	0.1	8.9	29
Total	\$36,008.9	\$13,189.5	\$15,716.3	3,914.8	10,085.4	260.5		110,527

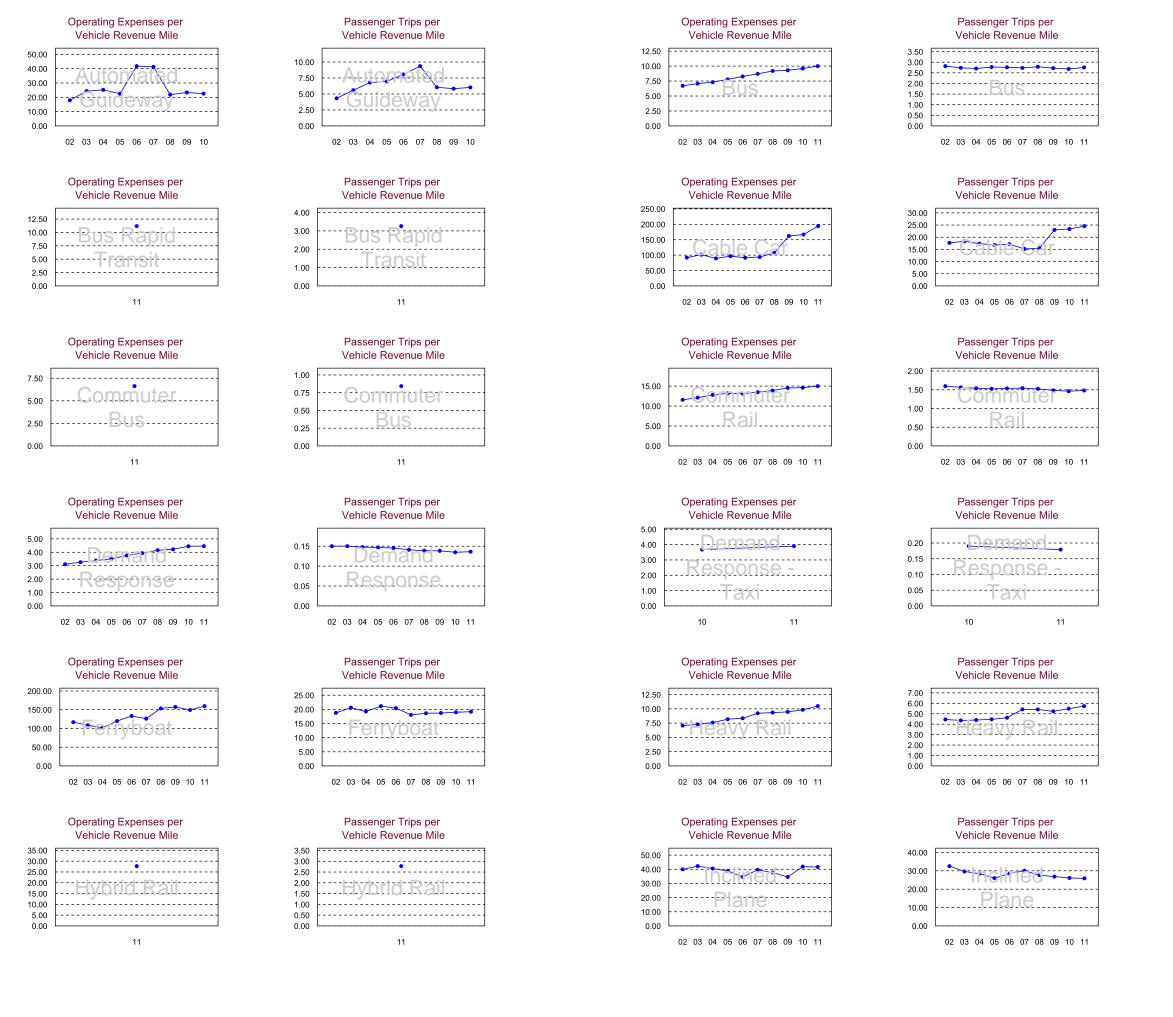
<sup>(\*)</sup> Includes some double-counting for bus mode. These are the fixed-guideway miles at the agency's fiscal year end for all levels of service (A through F).

**Modal Characteristics** 

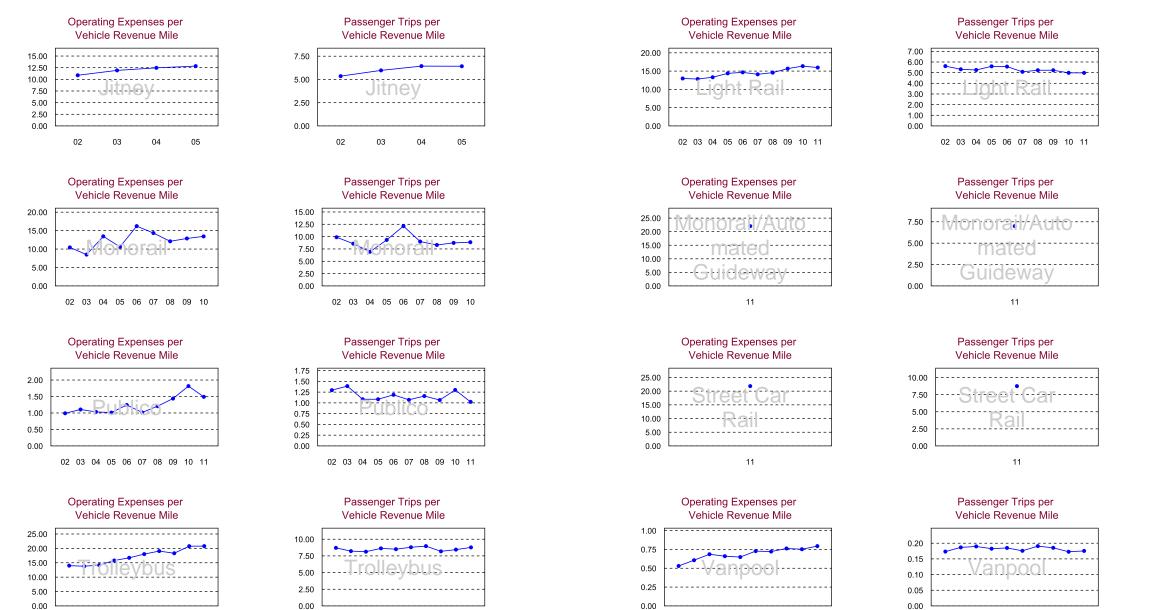
09/19/2012 10:55 AM Page 1 of 1

<sup>(\*\*)</sup> Includes Federal capital funds used to pay for operating expenses. (\*\*\*) Includes capital funds used to pay for capital projects.

<sup>(\*\*\*\*)</sup> Average UPT values not available for DT Demand Response Taxi.



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#### 2011 National Transit Profile Summary - Full Reporter Agencies

#### General Information (Millions)

# Service Consumption Annual Passenger Miles 54,328.1 Annual Unlinked Trips 10,042.9 Average Weekday Unlinked Trips (\*\*\*\*) Average Saturday Unlinked Trips (\*\*\*\*) Average Sunday Unlinked Trips (\*\*\*\*) 12.6

#### Service Supplied

Annual Vehicle Revenue Miles 3,856.1
Annual Vehicle Revenue Hours 256.2
Vehicles Operated in Maximum Service 108,373
Vehicles Available for Maximum Service 136,614

#### Financial Information (Millions)

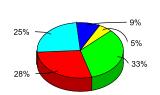
· · · · · ·	
Fare Revenues Earned	\$13,150.8
Sources of Operating Funds Expended	
Fare Revenues (33%)	\$13,075.7
Local Funds (28%)	\$11,151.9
State Funds (25%)	\$9,694.7
Federal Assistance (9%) (***)	\$3,482.7
Other Funds (5%)	\$2,004.5
Total Operating Funds Expended	\$39,409.5
Sources of Capital Funds Expended	
Local Funds (33%)	\$5,118.7
State Funds (13%)	\$2,046.0
Federal Assistance (44%) (***)	\$6,855.9
Other Funds (10%)	\$1,619.0
Total Capital Funds Expended	\$15,639.7

#### Summary Operating Expenses (Millions)

Salary, Wages, Benefits	23,546.5
Materials and Supplies	4,015.6
Purchased Transportation	4,514.8
Other Operating Expenses	3,665.0
Total Operating Expenses	35,741.9
Reconciling Cash Expenditures	3,529.2

Performance Measures

## Sources of Operating Funds Expended



#### Sources of Capital Funds Expended



Vehicles Operated in Maximum Service and Uses of Capital Funds

												Unlinked	Unlinked
								Operating	Operating		Operating	Passenger	Passenger
								Expense per	Expense per	Operating	Expense per	Trips per	Trips per
								Vehicle	Vehicle	Expense per	Unlinked	Vehicle	Vehicle
	Directly	Purchased	Revenue	Systems and	Facilities and			Revenue	Revenue	Passenger	Passenger	Revenue	Revenue
Mode	Operated	Transportation	Vehicles	Guideways	Stations	Other	Total	Mile	Hour	Mile	Trip	Mile	Hour
Bus	40,776	7,625	\$2,141.9	\$512.6	\$1,061.8	\$176.6	\$3,892.9	\$10.1	\$124.5	\$0.9	\$3.6	2.8	34.4
Heavy Rail	9,057	32	\$440.7	\$2,610.7	\$1,956.5	\$447.2	\$5,455.0	\$10.5	\$210.1	\$0.4	\$1.8	5.7	114.9
Commuter Rail	4,867	1,192	\$722.1	\$1,130.2	\$537.3	\$58.6	\$2,448.2	\$15.0	\$490.6	\$0.4	\$10.1	1.5	48.5
Demand Response	6,170	16,782	\$186.6	\$18.2	\$23.1	\$6.0	\$233.9	\$4.5	\$65.0	\$3.6	\$33.5	0.1	1.9
Demand Response - Taxi	0	4,044	\$0.2	\$0.0	\$0.0	\$0.0	\$0.2	\$3.9	\$48.6	\$3.5	\$21.8	0.2	2.2
Light Rail	1,233	94	\$244.7	\$2,229.4	\$531.5	\$30.5	\$3,036.0	\$16.0	\$248.4	\$0.6	\$3.2	5.0	77.5
Ferryboat	70	38	\$152.2	\$3.6	\$99.8	\$8.5	\$264.1	\$159.6	\$1,442.2	\$1.3	\$8.3	19.2	173.3
Trolleybus	403	0	\$4.4	\$21.4	\$0.6	\$0.4	\$26.8	\$20.8	\$147.2	\$1.5	\$2.4	8.8	62.1
Cable Car	27	0	\$0.7	\$11.7	\$0.1	\$0.0	\$12.5	\$194.1	\$381.4	\$6.2	\$7.9	24.6	48.3
Vanpool	7,028	4,382	\$23.3	\$0.4	\$0.8	\$0.6	\$25.0	\$0.8	\$33.7	\$0.1	\$4.7	0.2	7.1
Monorail/Automated Gui	38	4	\$3.8	\$0.8	\$1.7	\$0.2	\$6.5	\$22.1	\$237.9	\$2.8	\$3.2	7.0	75.5
Publico	0	3,259	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.5	\$17.7	\$0.3	\$1.5	1.0	12.2
Inclined Plane	6	2	\$0.0	\$0.4	\$0.3	\$0.0	\$0.7	\$41.6	\$131.0	\$4.7	\$1.6	25.9	81.5
Alaska Railroad	30	0	\$0.2	\$7.3	\$0.2	\$0.3	\$7.9	\$33.1	\$617.3	\$1.5	\$28.5	1.2	21.6
Bus Rapid Transit	41	14	\$19.4	\$16.4	\$6.1	\$18.0	\$59.9	\$11.9	\$146.3	\$0.9	\$3.4	3.5	43.6
Commuter Bus	346	610	\$62.0	\$23.0	\$45.0	\$0.2	\$130.4	\$6.6	\$173.6	\$0.3	\$7.9	0.8	22.1
Street Car Rail	152	22	\$9.5	\$22.8	\$1.3	\$0.5	\$34.1	\$21.8	\$179.5	\$1.1	\$2.5	8.8	71.9
Hybrid Rail	0	29	\$1.2	\$2.9	\$1.5	\$0.1	\$5.7	\$27.7	\$653.4	\$0.8	\$10.0	2.8	65.4
Total	70,244	38,129	\$4,012.9	\$6,611.7	\$4,267.5	\$747.6	\$15,639.7						

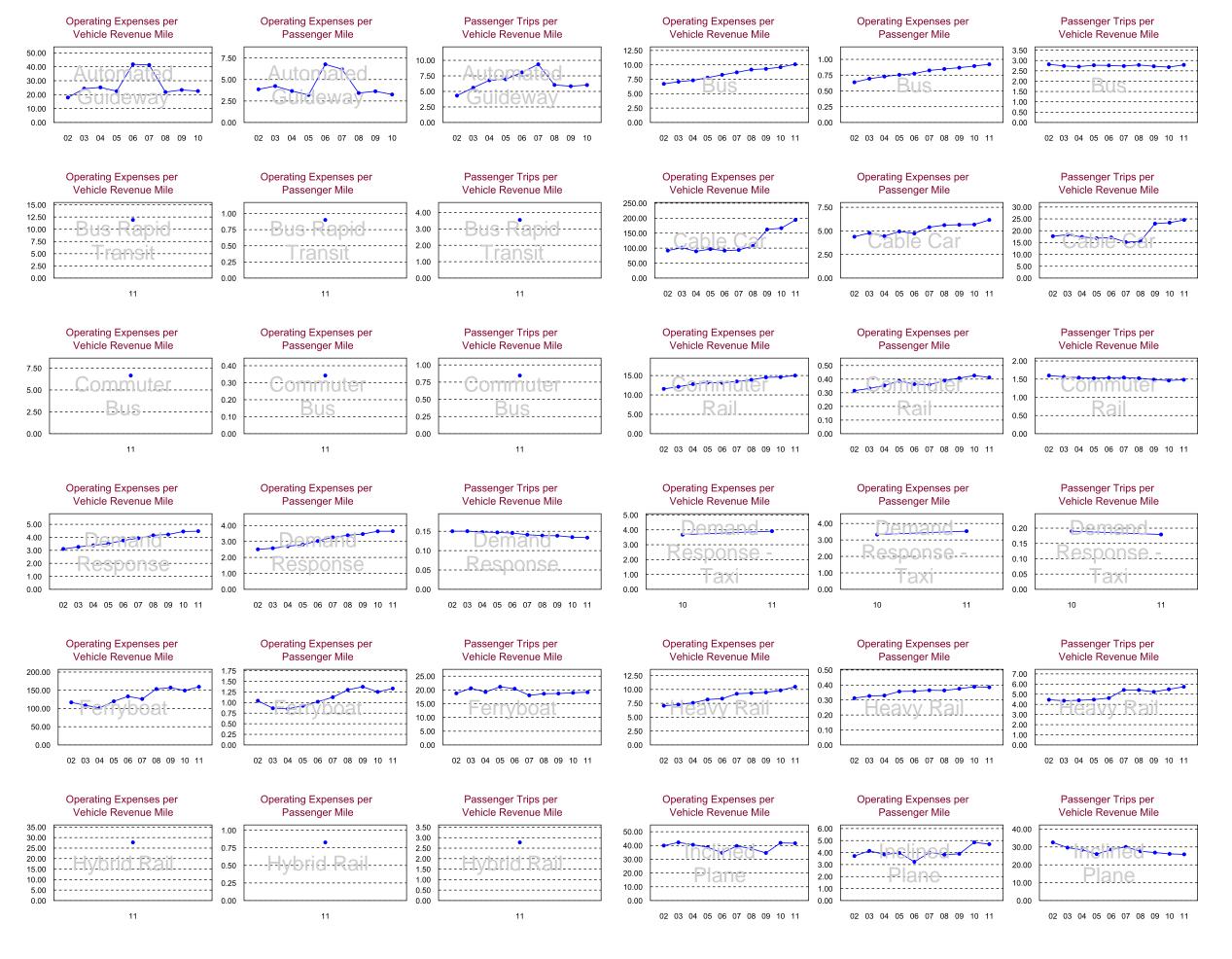
Modal Characteristics													
					Annual			Fixed					
			Uses of	Annual	Vehicle	Annual	Annual	Guideway	Vehicles		Vehicles		
	Operating	Fare	Capital	Passenger	Revenue	Unlinked	Vehicle	Directional	Available for	Average	Operated in	Peak to	
	Expenses	Revenues	Funds	Miles	Miles	Trips	Revenue	Route	Maximum	Fleet Age	Maximum	Base	Percent
Mode	(Millions)	(Millions)	(Millions)	(Millions)	(Millions)	(Millions)	Hours	Miles (*)	Service	in Years	Service	Ratio	Spares
Bus	\$18,329.6	\$5,088.9	\$3,892.9	19,882.7	1,815.7	5,063.9	147.2	3705.1	59,871	7.5	48,401	1.5	24%
Heavy Rail	\$6,669.1	\$4,401.8	\$5,455.0	17,316.6	636.3	3,647.1	31.7	1617.2	14,942	19.2	9,089	1.6	64%
Commuter Rail	\$4,668.8	\$2,434.2	\$2,448.2	11,314.2	311.2	461.3	9.5	7576.4	6,971	19.3	6,059	1.7	15%
Demand Response	\$3,086.4	\$223.0	\$233.9	846.3	689.6	92.0	47.5	N/A	27,935	3.7	22,952	N/A	22%
Demand Response - Taxi	\$114.4	\$11.4	\$0.2	32.4	29.2	5.2	2.4	N/A	3,911	N/A	4,044	N/A	0%
Light Rail	\$1,393.0	\$418.1	\$3,036.0	2,197.7	87.3	434.5	5.6	1397.5	1,969	14.0	1,327	1.4	48%
Ferryboat	\$518.3	\$124.0	\$264.1	389.4	3.2	62.3	0.4	675.0	140	20.3	108	0.0	31%
Trolleybus	\$232.6	\$84.3	\$26.8	160.3	11.2	98.2	1.6	451.4	479	11.4	403	1.2	19%
Cable Car	\$55.7	\$24.9	\$12.5	9.0	0.3	7.0	0.1	8.8	40	101.7	27	1.4	48%
Vanpool	\$158.1	\$99.7	\$25.0	1,147.7	189.8	33.3	4.7	N/A	12,993	3.2	11,410	N/A	14%
Monorail/Automated Gui	\$43.8	\$4.4	\$6.5	15.7	2.0	13.9	0.2	18.6	65	17.9	42	1.1	55%
Publico	\$56.3	\$55.2	\$0.0	171.7	37.8	38.7	3.2	N/A	5,624	N/A	3,259	N/A	73%
Inclined Plane	\$2.5	\$3.8	\$0.7	0.5	0.1	1.6	0.0	2.8	. 8	81.5	. 8	1.0	0%
Alaska Railroad	\$3.3	\$1.4	\$7.9	2.2	0.1	0.1	0.0	959.9	95	23.5	30	1.0	217%
Bus Rapid Transit	\$20.5	\$4.8	\$59.9	22.8	1.7	6.1	0.1	13.1	75	1.6	55	1.1	36%
Commuter Bus	\$223.5	\$126.1	\$130.4	653.1	33.6	28.4	1.3	633.9	1,181	7.5	956	3.7	24%
Street Car Rail	\$108.5	\$38.6	\$34.1	96.0	5.0	43.5	0.6	135.7	271	38.9	174	1.4	56%
Hybrid Rail	\$57.6	\$6.2	\$5.7	69.7	2.1	5.8	0.1	207.2	44	8.9	29	2.4	52%
Total	\$35,741.9	\$13,150.8	\$15,639.7	54,328.1	3,856.1	10,042.9	256.2	17,402.6	136,614		108,373		

<sup>(\*)</sup> Includes some double-counting for bus mode. These are the fixed-guideway miles at the agency's fiscal year end for all levels of service (A through F).

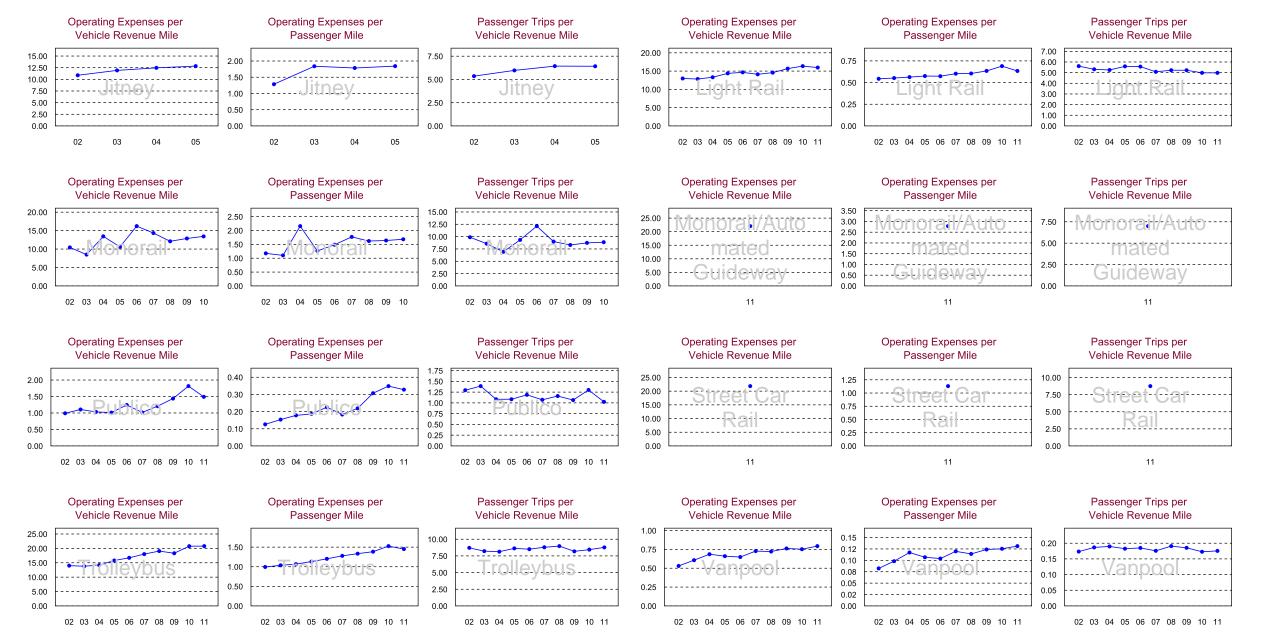
09/19/2012 10:09 AM Page 1 of 1

<sup>(\*\*)</sup> Includes Federal capital funds used to pay for operating expenses. (\*\*\*) Includes capital funds used to pay for capital projects.

<sup>(\*\*\*\*)</sup> Average UPT values not available for DT Demand Response Taxi.



09/19/2012 10:09 AM Page 2 of 2



09/19/2012 10:09 AM Page 3 of 3

## **Appendix C: Transit Agencies Receiving FTA-Approved Reporting Exemptions**

Appendix C: Transit Agencies Receiving Reporting Waivers(Approved By FTA)								
			Reporting Waivers					
State	ID	Org Type	Agency Name					
AL	4049	City	Gadsden Transportation Services - City of Gadsden(GTS)					
AR	6034	City	Pine Bluff Transit(PBT)					
AR	6104	City	Jonesboro Economical Transportation System(JETS)					
ΑZ	6123	Agency	Yuma County Intergovernmental Public Transportation Authority(YCAT)					
CA	9163	City	Camarillo Area Transit(CAT)					
CA	9174	City	City of Benicia(Benicia Breeze)					
CA	9197	City	City of Tracy(TRACER)					
CA	9199	City	City of Madera(MAX/DAR)					
CA	9217	City	City of Manteca					
CA	9218	Agency	Riverside County Transportation Commission(RCTC)					
CA	9224		Paratransit, Inc. CTSA					
CO	8027	City	Berthoud Area Transportation Service(BATS)					
СТ	1045	For-Profit	Dattco, Inc.					
СТ	1124	City	City of Bridgeport(BPT)					
FL	4120	City	City of Ocala, Florida(SunTran)					
GA	4161	City	Cherokee County Board of Commissioners(CATS)					
GA	4181	City	Henry County Transit(HC)					
GA	4193	O.I.y	Liberty Transit					
ID	0048	City	Lewiston Transit System(LTS)					
ID	0053	Other	Coeur d'Alene Tribe dba Citylink Transit(Citylink)					
ID	0055	Other	Kootenai County					
IN	5098	City	Michigan City Transit(MC Transit)					
IN	5177	City	ColumBUS Transit(ColumBUS)					
KY		-						
	4020	City	Owensboro Transit System(OTS)					
KY	4196 5107	C:tv	Kentuckiana Regional Planning and Development Agency					
KY	5107	City	Henderson Area Rapid Transit(HART)					
LA	6023	City	Lake Charles Transit System(LCTS)					
LA	6112	Agency	River Parishes Transit Authority(RPTA)					
LA	6122	MPO	South Central Planning and Development Commission(SCPDC					
MA	1129	StateDOT	Massachusetts Department of Transportation(MassDOT)					
ME	1099	Other	York County Community Action Corporation(YCCAC)					
ME	1112	City	South Portland Bus Service					
MS	4060	City	Hub City Transit(HCT)					
NC	4010	City	Gastonia Transit(Gastonia Transit)					
NC	4095	City	Greenville Area Transit(GREAT)					
NC	4096	City	Tar River Transit(TRT)					
NC	4132	Agency	Goldsboro-Wayne Transportation Authority(GATEWAY)					
NC	4166	City	City of Jacksonville (Jacksonville Transit)					
NJ	2207	_	Hudson Transportation Management Association					
NM	6100	City	Red Apple Transit(COF)					
NY	2142	City	New Windsor - Cornwall Dial-A-Bus					
NY	2176	Agency	Kaser Bus Service(Kaser)					
NY	2182	Agency	Town of Highlands Dial-A-Bus					
NY	2191	City	City of Kingston Citibus					
NY	2206		Nassau Inter County Express)					
ОН	5142	Agency	Steel Valley Regional Transit Authority(Steel Valley RTA)					
ОН	5191		Mid-Ohio Regional Planning Commission					
OK	6118	City	City of Edmond					
PA	3093	City	City of Hazleton Hazleton Public Transit(HPT)					
PR	4112	City	City of San Juan(MSJ)					
PR	4114	City	Municipality of Aguada(Municipio de Aguada)					
PR	4115	City	Municipality of Caguas Mobility Office					

PR	4117	City	Municipality of Vega Baja(DDEC)
PR	4121	City	Municipality of Hormigueros
PR	4122	City	Municipality of Cayey(Cayey)
PR	4123	City	Federal Programs Municipality of Gurabo
PR	4124	City	Municipality of Cidra(MACPR)
PR	4126	City	Municipality of Humacao(SITRAH)
PR	4137	City	Municipality of Bayamon(BPTS)
PR	4145	City	Municipality of Manati(DCDH)
PR	4150	City	Municipal Government of Barceloneta
PR	4151	City	Municipal Government of Hatillo(MH)
PR	4160	City	Municipality of Camuy
PR	4163	City	Municipality of Catano
PR	4164	City	Municipality of Fajardo(Municipo de Fajardo)
PR	4165	City	Municipality of Juncos(STJ)
PR	4174	City	Municipality of Yauco
PR	4182	City	Municipality of Toa Baja
PR	4183	City	Municipality of San Sebastian(PEPINO)
PR	4194		Municipality of Mayaguez
PR	4195		Municipality of San Lorenzo
PR	4197	City	Municipality of Lares
PR	4198	City	Municipality of Dorado
PR	4199	City	Municipality of Vega Alta
PR	4201		Municipality of Guaynabo
PR	4202		Municipality of Maunabo
SC	4156	MPO	Lower Savannah COG(LSCOG)
SC	4187	Contractor	York County Council on Aging(YCCOA)
TN	4189	MPO	Lakeway Area Metropolitan Transportation Planning Organization(LAMTPO)
TN	4190	Agency	East Tennessee Human Resource Agency, Inc.(ETHRA)
TX	6093	Agency	Texarkana Urban Transit District(T Line)
TX	6119	City	Harris County Improvement District 1 a.k.a. Uptown-Houston(HCID1)
TX	6120	StateDOT	Westchase District(westchase district)
VA	3099	City	City of Winchester (Winchester Transit)
VA	3105	MPO	Northern Virginia Transportation Commission(NVTC)
WA	0051	City	Asotin County PTBA(PTBA)
WA	0056		Port of Kingston
WV	3066	Other Public	Weirton Transit Corporation(WTC)
WV	3090	Agency	Eastern Panhandle Transit Authority(EPTA)

## **Appendix D: Profile Data Elements Cross-referenced to the 2011 NTD Report Location / Calculation**

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
1	Criteria for selecting agencies to be profiled				Only active agencies that are not 9 or fewer exemptions are profiled	Agencies that received waiver from  Detailed reporting were also not profiled in  Addition to agencies operating 9 or fewer vehicles.
2	Agency Information	Agency Name	Basic Information Module - Identification form (B-10)	Agency Name		
3	Agency Information	ID Number	Basic Information Module - Identification form (B-10)	trs_id		
4	Agency Information	URL	Basic Information Module - Identification form (B-10)	URL	N/A if blank	
5	Agency Information	Address	Basic Information Module - Identification form (B-10)	Street1 Street2 City State Zip Code		
6	CEO Information	CEO Title	Basic Information Module - Transit Agency Contacts (B- 20)	CEO Honorific First name, Initial. Last name Professional title Phone + extension		
7	Contract Information	Contract Type	Basic Information Module - Contractual Relationship (B-30)		Conditional Field  Shows only if there is a contractual relationship with another NTD reporter	

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
8	Contract Information	Contractor ID	Basic Information Module - Contractual Relationship (B-30)		Conditional Field  Shows only if there is a contractual relationship with another NTD reporter	
9	Contract Information	Contractor Name	Basic Information Module - Contractual Relationship (B-30)		Conditional Field  Shows only if there is a contractual relationship with another NTD reporter	
10	General Information - Urbanized Area (UZA) Statistics – (Primary UZA)	Name	Basic Information Module - Identification form (B-10)	B-10 - Item 5 Primary UZA name.		
11	General Information - Urbanized Area (UZA) Statistics – (Primary UZA)	Square Mileage		Not included in B- 10 Form.		
12	General Information - Urbanized Area (UZA) Statistics – (Primary UZA)	Population		Not included in B- 10 Form.		
12A	General Information – Agency Type	Organization Type	Basic Information Module - Identification form (B-10)	B-10 item 3	New organization types in 2010.	Don't see Organization type in the detail profile for agency
13	General Information - Urbanized Area (UZA) Statistics – (Primary UZA)	Population Ranking out of 465 UZAs	Basic Information Module - Identification form (B-10)	B-10 - Item 5 - Primary UZA number.		
14	General Information - Urbanized Area (UZA) Statistics	Other UZAs Served	Basic Information Module - Identification form (B-10)	B-10- Item 5 - Secondary UZAs		

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
15	General Information - Service Area Statistics	Square Miles	Basic Information Module - Identification form (B-10)	B-10 - Item 5 - Service area square mileage		
16	General Information - Service Area Statistics	Population	Basic Information Module - Identification form (B-10)	B-10 - Item 5 - Service area population		
17	General Information - Service Consumption	Annual Passenger Miles	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10- Rail - Line 20(d) Non-Rail - Line 20(d)	Sum across all modes and types of service	
18	General Information - Service Consumption	Annual Unlinked Passenger Trips	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10- Rail - Line 18(d) Non-Rail - Line 18(d) W30-Line10(c)	Sum across all modes and types of service	
19	General Information - Service Consumption	Average Weekday Unlinked Passenger Trips	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10- Rail - Line 18(a) Non-Rail - Line 18(a)	Sum across all modes and types of service	
20	General Information - Service Consumption	Average Saturday Unlinked Passenger Trips	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10- Rail - Line 18(b) Non-Rail - Line 18(b)	Sum across all modes and types of service	
21	General Information - Service Consumption	Average Sunday Unlinked Passenger Trips	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10- Rail - Line 18(c) Non-Rail - Line 18(c)	Sum across all modes and types of service	
22	General Information - Service Supplied	Annual Vehicle Revenue Miles	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10- Rail - Line 12(d) Non-Rail - Line 12(d) W30- Line10(a)	Sum across all modes and types of service	
23	General Information - Service	Annual Vehicle Revenue Hours	Service Module - Service form (S-10) - Rail	S-10- Rail - Line 15(d) Non-Rail - Line	Sum across all modes and types of service	

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
	Supplied		and Non- Rail.	15(d) W30-Line10(b)		
24	General Information - Service Supplied	Vehicles Operated in Maximum Service	Basic Information Module - Identification form (B-10)	B-10 - Item 6	Sum across all modes and types of service	
25	General Information - Service Supplied	Vehicles Available for Maximum Service	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10 - Line 2(a)	Sum across all modes and types of service	
26	General Information - Service Supplied	Base Period Requirement	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10 - Rail: Sum (line 6(f)) Non-Rail: Sum(line(6(f))	Sum across all modes and types of service	
27	Financial Information	Fare Revenues Earned	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	F-10 - Item 1 Sum (col c) for each mode  W30 - Line3 Sum(col d) for each mode	Sum across all modes and types of service	F-10 Line 2(c) + Line 4(c)
28	Financial Information - Sources of Operating Funds Expended	Fare Revenues	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	F-10 - Line 2(d) + line 4(d)  W30 - Line3  Sum(col d) for each mode		
29	Financial Information - Sources of Operating Funds Expended	Local Funds	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	F-10 - Line 28(d)+ Line 29(d)+ Line 32(d)+ Line 41(d)+ Line 42(d)+ Line44(d)	Changed in 2010	Line 14(d)+Line 28(d)+ Line 32(d) + Line 41(d) +Line 42 (d)

	Transit Folioc. All Reporting Agencies 1112 2011 Report For							
Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes			
				W30 -				
				Line 6(d)				
30	Financial	State Funds	Financial	F-10 -	Changed in			
	Information - Sources of		Module - Sources of	Line 45(d)+	2010			
	Operating		Funds -	Line 54(d)+		Line 45(d) + Line 54(d)		
	Funds Expended		Funds Expended	Line 55(d)+		Line 55(d)		
			and Funds	Line57(d)				
			Earned form (F-10)	W30-				
			,	Line 7(d)				
31	Financial	Federal	Financial	F-10 OR W30-	Changed in			
31	Information -	Assistance	Module -		2010			
	Sources of Operating		Sources of Funds -	Line 58a(d)+				
	Funds		Funds	Line 58b(d)+				
	Expended		Expended and Funds	Line 58(d)+				
			Earned form	Line 60a(d)+				
			(F-10)	Line 60b(d)+				
				Line 61(d)+				
				Line 62(d)+				
				Line 65(d)+				
				Line 66a(d)+				
				Line 66b(d)+				
				Line 66(d)+				
				Line 68(d)+				
				Line 69(d)+				
				Line 70a(d)+ Line 71(d)+				
				Line 71(d)+ Line 72(d)+				
				Line 72(d)+				
				Line74(d)+ Line74a(d)+				
				Line74a(d)+				
32	Financial Information -	Other Funds	Financial Module -	F-10 -		Line 12(d)+		
	Sources of		Sources of	Line 12(d)+		Line 13(d)+		
	Operating Funds		Funds - Funds	Line 13(d)+		Line18(d)+		
	Expended		Expended and Funds	Line18(d)		Line 29(d)		
			Earned form					
			(F-10)	W30-				

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
				Line 4(d) + Line 5(d) + Line 8(d)		
33	Financial Information - Sources of Operating Funds Expended	Total Operating Funds Expended	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	Items 28+ 29+ 30+ 31+ 32	Calculated from other profile fields	Line 79(d)  OR  Items 28+ 29+ 30+ 31+ 32
34	Financial Information - Sources of Capital Funds Expended	Local Funds	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	F-10 - Line 28(e)+ Line 29(e)+ Line 32(e)+ Line 41(e)+ Line 42(e)+ Line44(e)  W30 - Line 6(e)	Changed in 2010	Line 14(e)+Line 28(e)+ Line 32(e) + Line 41(e) +Line 42(e)
35	Financial Information - Sources of Capital Funds Expended	State Funds	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	F-10 - Line 45(e)+ Line54(e)+ Line 55(e)+ Line57(e) W30- Line 7(e)	Changed in 2010	Line 45 (e)+ Line 54 (e)+ Line 55(e)
36	Financial Information - Sources of Capital Funds Expended	Federal Assistance	Financial Module - Sources of Funds - Funds Expended and Funds Earned form	F-10 OR W30- Line 58a(e)+ Line 58b(e)+ Line 58(e)+ Line 60a(e)+	Changed in 2010	

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
			(F-10)	Line 60(e)+ Line 64(e)+ Line 66a(e)+ Line 68(e)+ Line 69(e)+ Line 70a(e)+ Line 71(e)+ Line74(e)+ Line74a(e)+ Line75(e)		
37	Financial Information - Sources of Capital Funds Expended	Other Funds	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	F-10 - Line 2(e)+ Line 4(e)+ Line 12(e)+ Line 13(e)+ Line 18(e)  W30- Line 4(e)+ Line 5(e) + Line 8 (e)	Other capital funds include fare revenues; For operating funding, fare revenues are a separate category	Line 2(e)+ Line 4(e)+ Line 12(e)+ Line 13 a (e)+ Line 13b(e) Line 18(e) + Line 29(e)
38	Financial Information - Sources of Capital Funds Expended	Total Capital Funds Expended	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	Items 34+ 35+ 36+ 37	Calculated from other profile fields	Line 80(e) OR Items 34+ 35+ 36+
39	Summary of Operating Expenses	Salaries, Wages and Benefits	Financial Module - Operating Expenses form (F-30)	F-30 - salwages= Line 1(e)+ Line 2(e)+ Line 3(e)	Sum across all modes and types of service and functions	

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
40	Summary of Operating Expenses	Materials and Supplies	Financial Module - Operating Expenses form (F-30)	F-30 - mat_sup= Line 5(e)+ Line 6(e)+ Line 7(e)	Sum across all modes and types of service and functions	
41	Summary of Operating Expenses	Purchased Transportation	Financial Module - Operating Expenses form (F-30)	F-30- PT= Line 11(e)+ Line 12(e)	Sum across all modes and types of service and functions	
42	Summary of Operating Expenses	Other Operating Expenses	Financial Module - Operating Expenses form (F-30)	F-30- Other = Line 4(e)+ Line 8(e)+ Line 9(e)+ Line 10(e)+ Line 13(e)+ line 14(e)	Sum across all modes and types of service and functions	
43	Summary of Operating Expenses	Total Operating Expenses	Financial Module - Operating Expenses form (F-30)	tot_exp= salwages+ mat_sup+ PT+ Other (OR) W30- Line 1(d) Sum of all modes	Calculated from other profile fields	Item 39+item40 + item 41+ item 42.
44	Summary of Operating Expenses	Purchased Transportation Reported Separately	Financial Module - Operating Expenses form (F-30)	F-30 - Line 12(e)	Conditional - Shows only if there are 50802 expenses reported by agency	
45	Summary of Operating Expenses	Operating Expenses for the Service Included in this Profile	Financial Module - Operating Expenses form (F-30)	F-30 - tot_exp - Line 12(e)	Conditional - Shows only if there are 50802 expenses reported by agency calculated from other profile	does not show up in profile Report.

Item			Module /	Data Item /		
Number	Title	Data Item	Form	Calculation	Notes	
					fields	
46	Summary of Operating Expenses	Reconciling Cash Expenditures	Financial Module - Operating Expenses Summary form (F-40)	F-40- Line 24(a)		
47	Vehicles Operated in Maximum Service		Basic Information Module - Identification form (B-10)	DO:Item 6, DO PT: Item 6 PT	Footnote The number of vehicles operated in maximum service for PT includes vehicles for the service included in the profile only	
48	Uses of Capital Funds	Uses of Capital Funds - Rolling Stock	Financial Module - Uses of Capital form (F-20)	Sum (col e)	Sum across all types of service and categories (rehabilitation, expansion of service)	Data Item: Uses of Capital Funds -Revenue Vehicles
49	Uses of Capital Funds	Uses of Capital Funds - Systems and Guideway	Financial Module - Uses of Capital form (F-20)	Sum (col a + col g + col h)		
50	Uses of Capital Funds	Uses of Capital Funds - Facilities and Stations	Financial Module - Uses of Capital form (F-20)	Sum (col c + col b + col d)	Include administrative buildings and maintenance buildings  Sum across categories (rehabilitation, expansion of service)	
51	Uses of Capital Funds	Uses of Capital Funds - Other	Financial Module - Uses of Capital form (F-20)	Sum (col f + col i)		
52	Uses of Capital Funds	Uses of Capital Funds - Total	Financial Module - Uses of Capital form (F-20) OR	Sum (cols a - i) OR W30 Line 2(e)-Sum of All Modes		Item 48 + Item 49+ Item 50 + Item51

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
			W30 form			
53	Pie Chart - Sources of Operating Funds Expended	Sources of Operating Funds Expended - Same categories as for Financial – Operating Funds	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	Item 29/29+30+31+32   Item 30/29+30+31+32   Item 31/29+30+31+32   Item 32/29+30+31+32		
54	Pie Chart - Sources of Capital Funds Expended	Sources of Capital Funds Expended - Same categories as for Financial - Capital Funds	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	Item 42/42+43+44+45 Item 43/42+43+44+45 Item 44/42+43+44+45 Item 45/42+43+44+45		
55	Modal Characteristics	Operating Expenses	Financial Module - Operating Expenses form (F-30)	F-30 - Line 15(e) - Line 12(e) W30- Line 1(d)	Sum across all types of service	
56	Modal Characteristics	Fare Revenues Earned	Financial Module - Sources of Funds - Funds Expended and Funds Earned form (F-10)	F-10 -  Passenger Fares for Directly Operated Service + Fares for PT service for each mode -  Fare revenues for ALL contracts where the agency is the buyer and the data is captured in the seller's report.  W30 -  Line 3(d)	Sum across all types of service IF there is PT and the data is captured in a separate report, the corresponding fares are taken out	Line 1(c) + Line 3( c) of F10
56A	Modal Characteristics	Uses Of Capital funds	Financial Module - Uses of Capital form (F-20)	F-20 Total uses of capital for Each Mode		F20- Sum (cols a to i) This row is missing in the original document

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
				W30- Line 2(e)		
57	Modal Characteristics	Annual Passenger Miles	Service Module - Service form (S-10) - Rail and Non-Rail	S-10- Rail - Line 20(d) Non-Rail - Line 20(d)	Sum across all types of service	
58	Modal Characteristics	Annual Unlinked Trips	Service Module - Service form (S-10) - Rail and Non-Rail	S-10- Rail - Line 1 8(d) Non-Rail - Line 18(d) W30- Line 10(c)	Sum across all types of service	Item 60 should be Item 58
59	Modal Characteristics	Average Weekday Unlinked Trips	Service Module - Service form (S-10) - Rail and Non- Rail.	S-10- Rail - Line 18(a) Non-Rail - Line 18(a)	Sum across all types of service	Not used in report
60	Modal Characteristics	Annual Vehicle Revenue Miles	Service Module - Service form (S-10) - Rail and Non-Rail	S-10- Rail - Line 12(d) Non-Rail - Line 12(d) W30- Line 10(a)	Sum across all types of service	
61	Modal Characteristics	Annual Vehicle Revenue Hours	Service Module - Service form (S-10) - Rail and Non-Rail	S-10- Rail - Line 15(d) Non-Rail - Line 15(d) W30- Line 10(b)	Sum across all types of service	
62	Modal Characteristics	Fixed Guideway Directional Route Miles	Services – Fixed Guideway Segments form (S-20)	S-20 Summary - Rail Line 1 total Non-Rail (exclusive of TB, FB) Line 5 total FB, Line 1 Total TB Line 9 Total	Sum across all UZAs and types of service Does not apply for VP, DR, PB, JT	
63	Modal	Vehicles Available for	Service Module -	S-10 - Line 2(a)	Sum across all	

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
	Characteristics	Maximum Service	Service form (S-10) - Rail and Non-Rail		types of service	
64	Modal Characteristics	Average Fleet Age in Years	Asset Module - Revenue Vehicle Inventory form (A-30)	A30 - Sum ((CY - col f)*Sum (col j))/ Sum (col j)	Sum across all types of service If ALL vehicles are non- dedicated, should indicate 'N/A'	
65	Modal Characteristics	Vehicles Operated in Maximum Service	Basic Information Module - Identification form (B-10)	S-10 - Line 1(a) OR B-10 Line 6	Sum across all types of service	
66	Modal Characteristics	Peak to Base Ratio	Service Module - Service form (S-10) - Rail and Non-Rail	Rail:  MAX (line 6(e), line 6(g)) / line 6(f)  Non-Rail:  MAX (line 6(e), line 6(g)) / line 6(f)  'N/A' if mode = DR, JT, PB, VP	Sum across all types of service	
67	Modal Characteristics	Percent Spares	Service Module - Service form (S-10) - Rail and Non-Rail	S-10 - line 2(a) - line 1(a)/ line 1 (a)	Sum across all types of service Data in percent.	
68	Performance Measures – Service Efficiency	Operating Expense per Vehicle Revenue Mile	Financial Module - Operating Expenses form (F-30) Service Module - Service form (S-10) - Rail and Non-Rail	Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 12(d) - B-30 Other Costs by Buyer separately Non-Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 12(d)  OR W30- Line 1(d)/ W30- Line 10(a)	Sum across all types of service for total modal operating expenses (TEXP)	Item 55/Item 60 (Make sure if you reorder the rows to match the reports to change it here also)

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
69	Performance Measures – Service Efficiency	Operating Expense per Vehicle Revenue Hour	Financial Module - Operating Expenses form (F-30) Service Module - Service form (S-10) - Rail and Non-Rail	Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 15(d) - B-30 Other Costs by Buyer separately Non-Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 15(d) OR W30- Line 1(d)/ W30- Line 10(b)	Sum across all types of service (See definition of TEXP above for item operating expenses)	Item 55/Item 61  (Make sure if you reorder the rows to match the reports to change it here also)
70	Performance Measures – Cost Effectiveness	Operating Expense per Passenger Mile	Financial Module - Operating Expenses form (F-30) Service Module - Service form (S-10) - Rail and Non-Rail	Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 20(d) - B-30 Other Costs by Buyer separately Non-Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 20(d)	Sum across all types of service (See definition of TEXP above for item operating expenses)	Title in report:  Performance Measures – Service Effectiveness  Item 55/Item57  (Make sure if you reorder the rows to match the reports to change it here also)
71	Performance Measures – Cost Effectiveness	Operating Expense per Unlinked Passenger Trip	Financial Module - Operating Expenses form (F-30) Service Module - Service form (S-10) - Rail and Non-Rail	Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 18(d) - B-30 Other Costs by Buyer separately Non-Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 18(d) OR W30- Line 1(d)/ W30- Line 10(c)	Sum across all types of service (See definition of TEXP above for item operating expenses)	Title in report:  Performance Measures – Service Effectiveness  Item 55/ Item 58  (Make sure if you reorder the rows to match the reports to change it here also)
72	Performance Measures – Service Effectiveness	Unlinked Passenger Trip per Vehicle Revenue Mile	Service Module - Service form (S-10) - Rail and Non-Rail	Rail: S-10 - line 18(d) /S-10 - Line 12(d) Non-Rail: S-10 - line 18(d) /S-10 - Line 12(d)	Sum across all types of service	Item 58/ Item60 (Make sure if you reorder the rows to match the reports to change it here also)

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
				OR W30- Line 10(c)/ W30- Line 10(a)		
73	Performance Measures – Service Effectiveness	Unlinked Passenger Trip per Vehicle Revenue Hour	Service Module - Service form (S-10) - Rail and Non-Rail	Rail: S-10 - line 18(d) /S-10 - Line 15(d) Non-Rail: S-10 - line 18(d) /S-10 - Line 15(d) OR W30- Line 10(c)/ W30- Line 10(b)	Sum across all types of service	Item58/Item61 (Make sure if you reorder the rows to match the reports to change it here also)
74	Line Graph - Performance Measures	Operating Expense per Vehicle Revenue Mile (Last 10 years)	Financial Module - Operating Expenses form (F-30) Service Module - Service form (S-10) - Rail and Non-Rail	Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 12(d) - B-30 Other Costs by Buyer separately Non-Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 12(d) OR W30- Line 1(d)/ W30- Line 10(a)	If number of modes < 2, show only top 3 graphs (See definition of TEXP above for item operating expenses)	
75	Line Graph - Performance Measures	Operating Expense per Passenger Mile (Last 10 years)	Financial Module - Operating Expenses form (F-30) Service Module - Service form (S-10) - Rail and Non-Rail	Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 20(d) - B-30 Other Costs by Buyer separately Non-Rail: F-30 - line 15(e) - line 12(e)/S-10 - Line 20(d)	If number of modes < 2, show only top 3 graphs.  (See definition of TEXP above for item operating expenses)	
76	Line Graph - Performance Measures	Unlinked Passenger Trips per Vehicle Revenue Mile (Last 10 years)	Service Module - Service form (S-10) - Rail and Non-Rail	Rail: S-10 - line 18(d) /S-10 - Line 12(d) Non-Rail: S-10 - line 18(d) /S-10 - Line 12(d) OR	If number of modes < 2, show only top 3 graphs	

Item Number	Title	Data Item	Module / Form	Data Item / Calculation	Notes	
				W30- Line 10(c)/		
				W30- Line 10(a)		